This Week in Metalworking

STEEL

Vol. 131 No. 3 July 21, 1952

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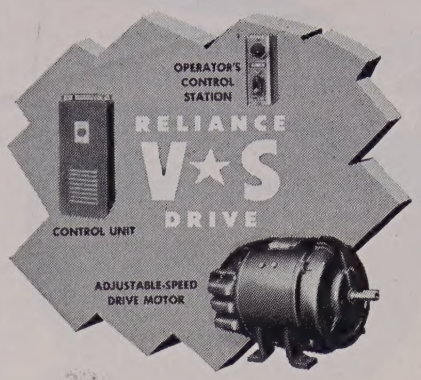
Editorial, Business Staffs—10. Advertising Index—181. Editorial Index available semiannually. STEEL also is indexed by Engineering Index Inc., 29 West 39th St., New York 18.

Published every Monday by the Penton Publishing Company, Penton Building, Cleveland 13, Ohio. Subscription in the United States and possessions, Canada, Mexico, Cuba, Central and South America, one year $10; two years $15; all other countries, one year $20. Single copies (current issues) 50 cents. Metalworking Yearbook issue $2.00. Entered as second class matter at the postoffice in Cleveland, under the Act of March 3, 1879. Copyright 1952 by Penton Publishing Co.



STEP UP PRODUCTION OF SMALL MACHINERY, TOO

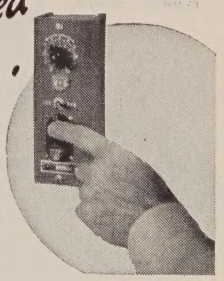
... with the All-electric Adjustable-speed V★S Drive

A smaller, lower-cost Reliance V★S Drive, available in sizes from 3/4 to 3 horsepower, has proved especially profitable in the operation of small machines. Write for Bulletin D-2101. For detailed information about larger V★S Drives to 300 horsepower, specify Bulletin D-2311.

✓ WIDE SPEED RANGES
✓ SMOOTH STARTING
✓ QUICK STOPPING
✓ JOGGING, INCHING, CREEPING
✓ FAST, SMOOTH REVERSING

and

Convenient Centralized Control...



Reliance V★S Drive features convenient-to-operate controls grouped and located where your operator can quickly, easily and safely control all functions of his machine.

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You Get BETTER MARKING with Pannier "MASTER MARKERS"

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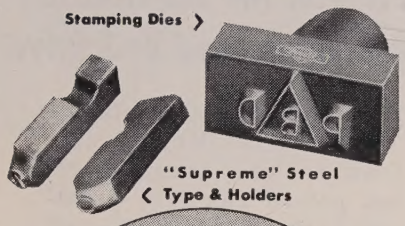
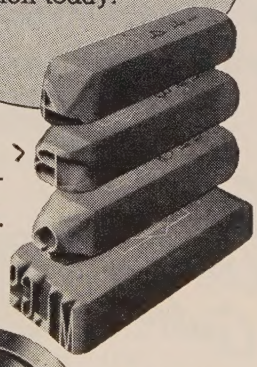
Stamping Dies

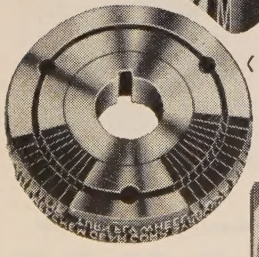


"Supreme" Steel Type & Holders

Famous in the steel industry for their durability and "good impressions," these Pannier "Master Markers" are *still* your best bet for efficient and clear-cut marking of steel and steel products. Write for full information today.



Extra Fillet, Double Bevel Steel Stamps — letter, figure, symbol, name.



Roller Dies and Segments

Embossing Dies (female shown)

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Los Angeles Youngstown
Jacksonville Philadelphia

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220 Pannier Bldg.
Pittsburgh 12, Pa.

EXPORT DEPT.: Bessemer Bldg., Pittsburgh, Pa.

Behind the Scenes . . .

Politically Weary

We suggest that in 1956 the Republicans and Democrats schedule at least two weeks between their conventions so that we haggard televiewers can get caught up on our sleep between shows. We stayed at our set to the bitter end of all the Republican evening sessions and have been exhausted ever since.

We're too tired to give much attention to the Democrats this year because we're still about ten hours behind on our slumber. We figure a lot of other people are in the same position. Maybe the Republicans will pick up a few extra votes next November all because some citizens were too weary to follow the Democratic oratory in July.

Cover Story

The photo on the cover was taken especially for STEEL by D. W. Dawson, manager, Product Development Division, American Welding & Mfg. Co., Warren, O. He's an amateur photographer who goes about it like a professional. He took several sets of pictures before finding one he liked, and after making the selection even followed through to supervise the developing and printing. We think he succeeded admirably.

The Right Time

At last the week has come which we have been waiting for since last year—National Inventors' and Junior Inventors' Week. For the past 12 months we've been compiling a list of things to invent. We need a filing cabinet that always has room for one more file folder, a desk drawer which always contains paper clips, pencils and copy paper and a gadget to disconnect the telephone whenever we wish.

First though, we're going to invent a hammock in which to lie while we think about our inventions.

Exemption

We were interested to discover that the employees of newspapers, magazines, radio and television stations, along with some others, didn't qualify for exemption from federal wage control.

It's extremely satisfying, though, to know that bowling alley employees made it.

The above information, by the way, comes from the front page of the same release which has another morsel buried inconspicuously on the last page. This refers to the new WSB, its appointment, approval and duties. Apparently pointed at the steel situation, the new board will not have the same disputes authority as has the present one. Also the members of the new board will have to be confirmed by the Senate. Good news all the way around.

No Wonder

In the last 24 hours your heart beat 103,389 times, your blood travelled 168 million miles, you breathed 23,040 times, inhaled 438 cubic feet of air, ate over 3 pounds of food, drank nearly 3 pounds of liquid, perspired 1.43 pints, moved 750 major muscles. Your nails grew 0.000046 inches, your hair 0.01714 inches. And you excerised 7 million brain cells.

No wonder you're tired.

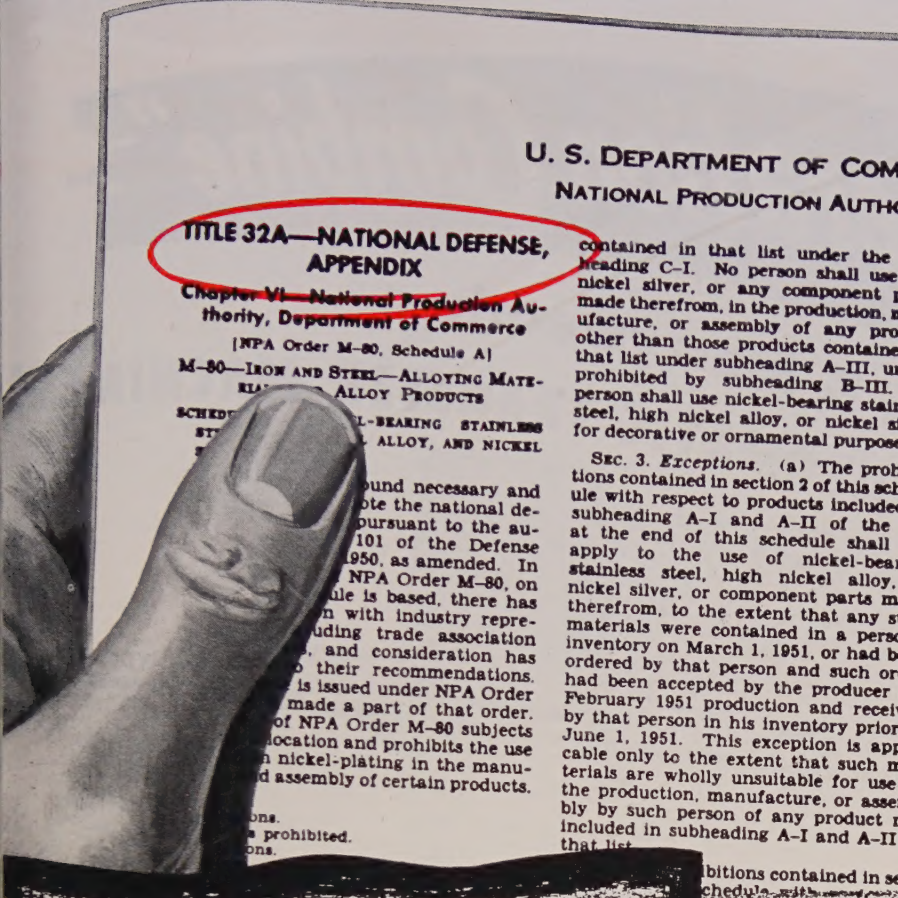
Puzzle Corner

Five cats did the job in the problem of July 7. First in with that answer were Merlin S. Gaylord of Defiance Stamping Co., T. S. Bean of Barber & Ross Co. and Grosvenor S. McKee of Talon Inc.

Try this problem: A boy slipped in and stole apples from an orchard guarded by three watchmen. On his way out he met the three watchmen one after another, and to each in turn he gave half of the apples he then had, and two besides. When he left he had one apple. How many had he originally?

Shrdlu

(Metalworking Outlook—Page 51)



Sched. A to M–80

AUGUST 15, 1951

U. S. DEPARTMENT OF COMMERCE

NATIONAL PRODUCTION AUTHORITY

TITLE 32A—NATIONAL DEFENSE, APPENDIX

Chapter VI—National Production Authority, Department of Commerce

[NPA Order M–80, Schedule A]

M–80—IRON AND STEEL—ALLOYING MATERIALS AND ALLOY PRODUCTS

SCHEDULE A—NICKEL-BEARING STAINLESS STEEL, HIGH NICKEL ALLOY, AND NICKEL SILVER

...ound necessary and ...ote the national de... ...pursuant to the au... ...101 of the Defense ...1950, as amended. In ... NPA Order M–80, on ...ule is based, there has ...n with industry repre... ...uding trade association ..., and consideration has ...o their recommendations. ... is issued under NPA Order ... made a part of that order. ...of NPA Order M–80 subjects ...location and prohibits the use ...n nickel-plating in the manu... ...d assembly of certain products.

...ons.

...e prohibited.

...ons.

contained in that list under the subheading C–I. No person shall use any nickel silver, or any component parts made therefrom, in the production, manufacture, or assembly of any product other than those products contained in that list under subheading A–III, unless prohibited by subheading B–III. No person shall use nickel-bearing stainless steel, high nickel alloy, or nickel silver for decorative or ornamental purposes.

SEC. 3. *Exceptions.* (a) The prohibitions contained in section 2 of this schedule with respect to products included in subheading A–I and A–II of the list at the end of this schedule shall not apply to the use of nickel-bearing stainless steel, high nickel alloy, or nickel silver, or component parts made therefrom, to the extent that any such materials were contained in a person's inventory on March 1, 1951, or had been ordered by that person and such order had been accepted by the producer for February 1951 production and received by that person in his inventory prior to June 1, 1951. This exception is applicable only to the extent that such materials are wholly unsuitable for use in the production, manufacture, or assembly by such person of any product not included in subheading A–I and A–II of that list.

...ibitions contained in sec... ...schedule with...

(d) Any unassembled component parts, produced prior to the issuance of, or in conformity with, this schedule, of products subject to the provisions of section 2 may be sold any time, and the purchaser thereof may assemble such component parts into products subject to the prohibitions of section 2 of this schedule at any time, provided such component parts are wholly unsuitable for use in the production, manufacture, or assembly of any product not prohibited.

(e) Notwithstanding that a product may be contained in the list under the subheadings A–I, B–I, and C–I, the prohibition contained in section 2 of this schedule shall not apply if any such product is manufactured exclusively for use on board vessels and aircraft operated by the Armed Forces of the United States, including the United States Coast Guard.

SEC. 4. *Records.* Every person who relies on the provisions of paragraphs (a), (b), or (c) of section 3 of this schedule shall prepare a detailed record showing: (a) the quantities of nickel-bearing stainless steel, high nickel alloy, and nickel silver, or component parts made therefrom, which were in his inventory on the first days of each month commencing with December 1950, and ending September 15, 1951, which were wholly unsuitable for use by him in...

IF YOUR PRODUCTION IS THREATENED BY THE CRITICAL MATERIAL CONTROLS

Is your product on this long list prohibited from using critical materials such as nickel-bearing stainless steel? Are you having difficulty obtaining aluminum or copper?

If you are, it will pay you to get all the facts regarding Sharon '430' Stainless Steel. This straight chrome stainless is the best available material today for many applications and has been used by hundreds of fabricators for thousands of products with great success. It has many of the qualities that have made stainless steel the most sought after metal today.

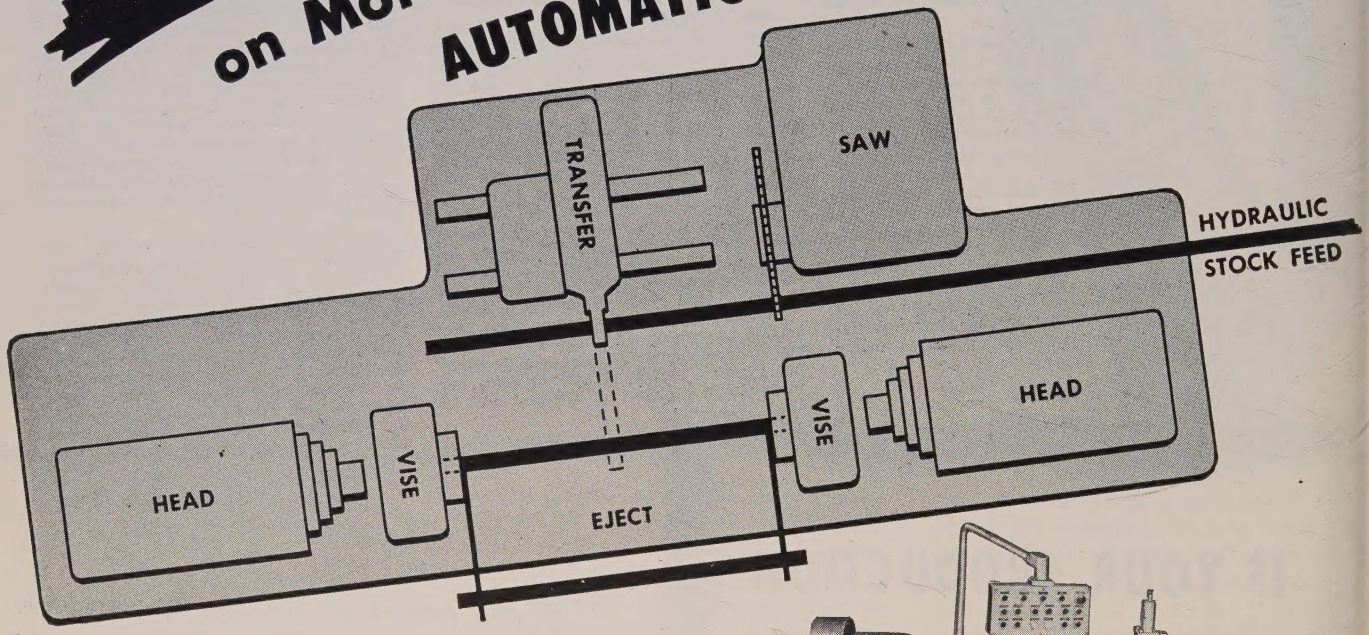
Sharon '430' is readily available with few restrictions as to end use. The Sharon Steel Corporation has prepared a special booklet giving information on Sharon '430'. To get yours, contact the Sharon office nearest you or write direct to ***Department 8752, Sharon Steel Corporation, Sharon, Pa.*** Engineering help and technical assistance, too, available without obligation.

SHARONSTEEL

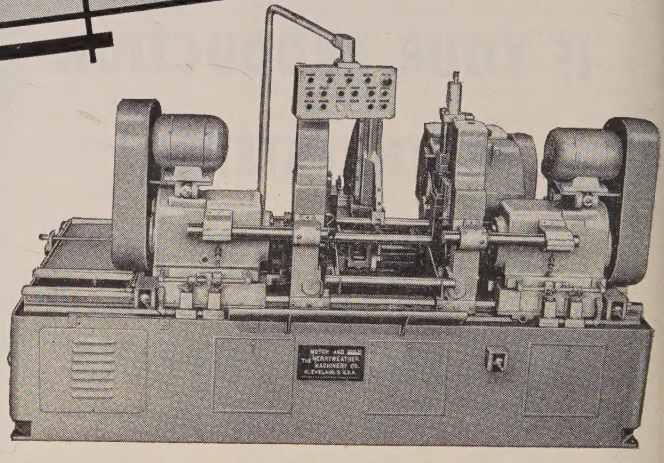
...YOU CAN CONTINUE WITH *Sharon* 430 *stainless*

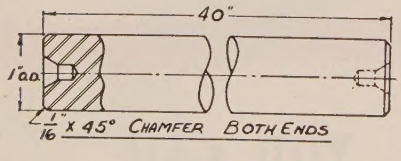
It's "Operation Combine"

on Motch & Merryweather AUTOMATIC TRANSFER MACHINES!

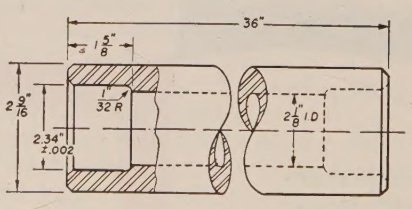


Machine both ends simultaneously and get the cut-off time free on Motch & Merryweather Automatic Transfer Machines. Save time, floor space and money. Get the details on your jobs! No obligation.

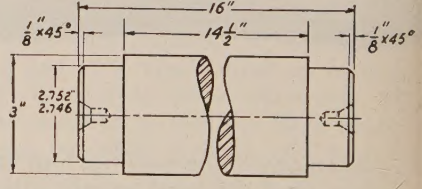




Operation: Cut off, chamfer and center drill both ends.
Material: SAE 1040 ground shafting.
Production: 240 pcs/hr.



Operation: Cut off; bore and chamfer inside and outside, both ends.
Material: SAE 1020 steel tubing.
Production: 140 pcs/hr. @ 100% eff.



Operation: Cut off, box mill, turn and center drill both ends.
Material: SAE 1020.
Production: 140 pcs/hr.

Manufactured by

THE MOTCH & MERRYWEATHER MACHINERY COMPANY
715 PENTON BUILDING • CLEVELAND 13, OHIO
Builders of Circular Sawing Equipment, Production Milling, Automatic and Special Machines

PRODUCTION-WITH-ACCURACY MACHINES AND EQUIPMENT

17% fuel saving!

and a 3-month write-off!

with BLOOM Ka-Weld PRECAST REINFORCED Pipe Insulation

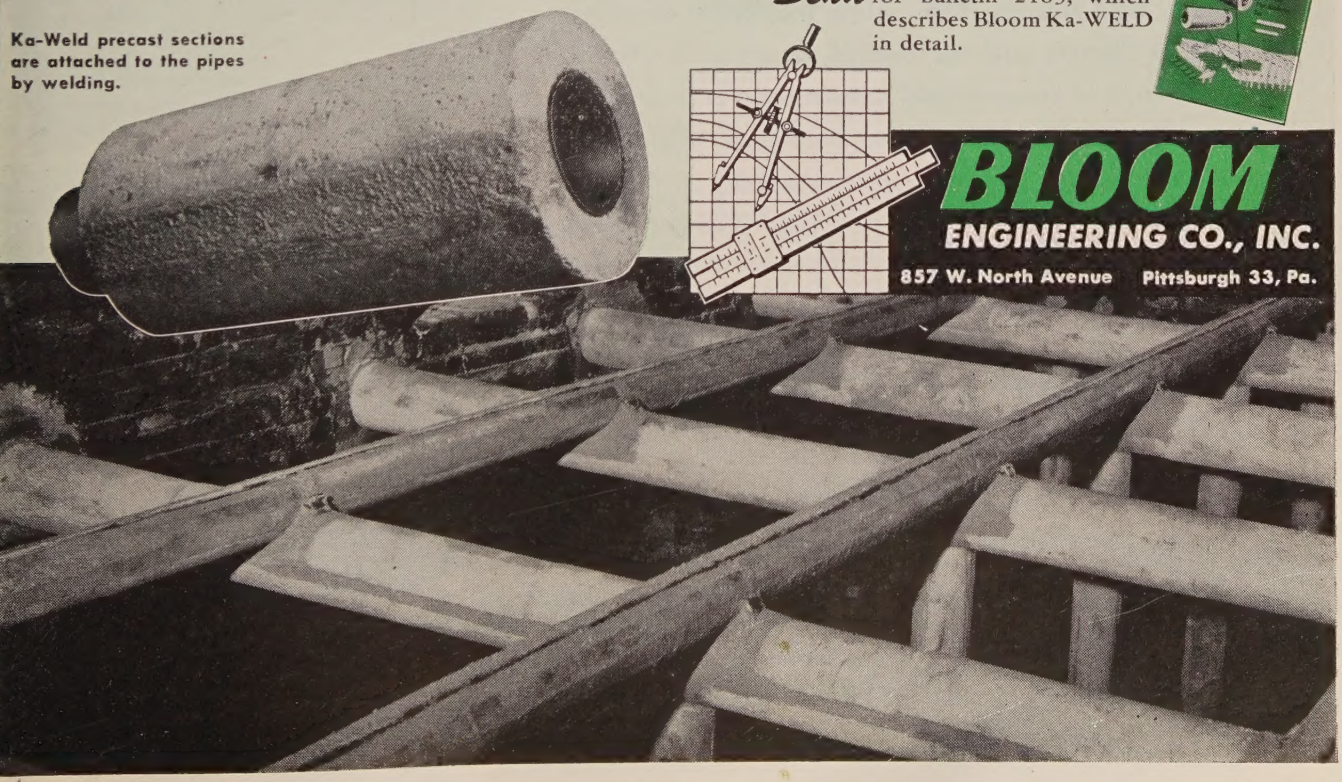
A midwestern plant reports an overall fuel savings of seventeen per cent, attributed to Bloom Ka-WELD installed on water-cooled support pipes of a strip mill furnace. As a result, complete write-off was obtained in *three months!*

Made of durable, readily-applied refractory material, Bloom Ka-WELD increases furnace output, reduces the heat-loss to cooling water, permits more uniform heating of steel due to increased bottom zone temperatures, prolongs skid life, reduces skid marks, slagging and sticking, saves water.

Such results, coupled with Bloom's one-year guarantee, make Ka-WELD an excellent investment.

Send for bulletin 2183, which describes Bloom Ka-WELD in detail.

Ka-Weld precast sections are attached to the pipes by welding.



BLOOM
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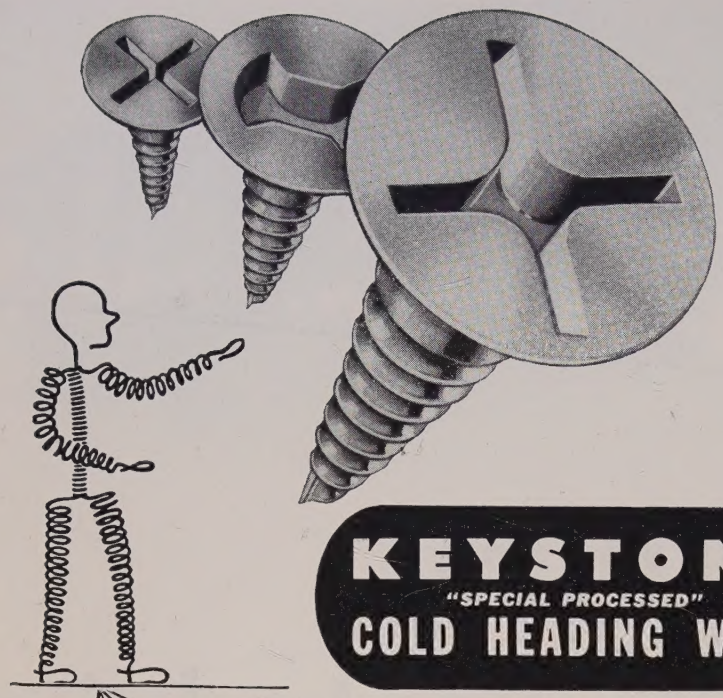

KEYSTONE
"SPECIAL PROCESSED"
COLD HEADING WIRE

EXCELLENT FLOW PROPERTIES

PROLONGS DIE LIFE

FEWER REJECTIONS

REDUCES INSPECTIONS

The excellent flow properties of Keystone "Special Processed" Cold Heading Wire assures the desired upsetting and die forming qualities required for the most efficient production of recessed-head screws. Shop records show that die and plug life are often more than doubled . . . finished product rejections are minimized . . . the cost of expensive final inspections is reduced. Compare Keystone "Special Processed" Cold Heading Wire for any tough cold heading job.

NOW AVAILABLE!

Keystone's "Special Processed" Cold Heading Wire is now available in C-1035 and C-1038 analysis for high strength, heat treated screws and bolts.

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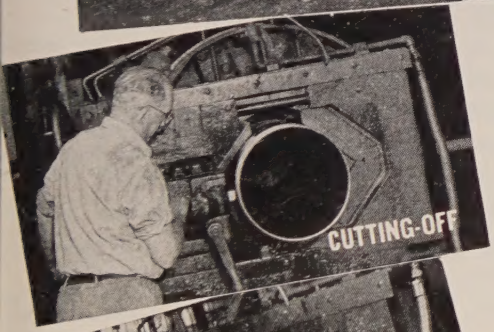
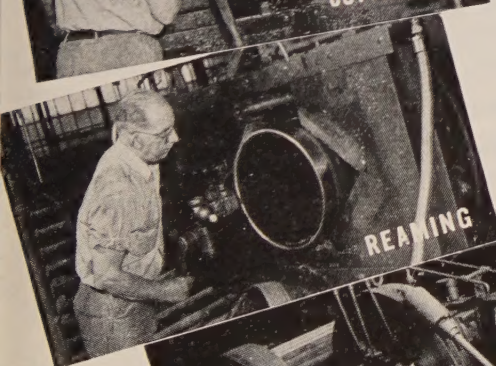
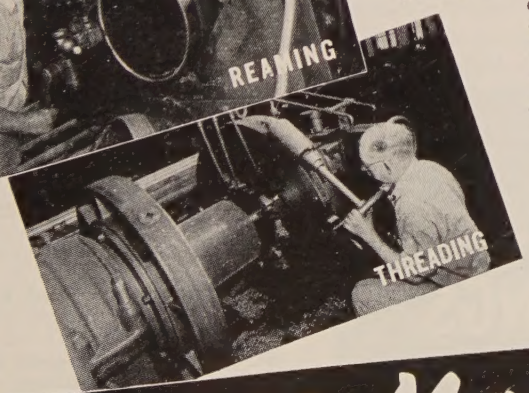
LANDIS PIPE THREADING MACHINES







. . . 4 Major Features Increase Efficiency

1. WIDE RANGE—Just three LANDIS Pipe Machines (2", 8" and 18") will thread all diameters of pipe from ½" to 18". Each machine is constructed so as to handle a wide range of pipe sizes—for example, the 6" machine will thread all diameters from 1" to 6". Universal size adjustment allows quick set-up.

2. DIE HEAD EFFICIENCY—The design of Stationary heads provides maximum rigidity on all diameters within their range. Positive locking action is assured through a self-locking toggle joint. Size adjustment is quickly and easily obtained through the use of a single locking nut.

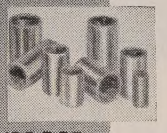
3. LOW TOOL COST—Chasers operate at a tangent to the work. Line contact at cutting edge reduces friction. Permanent throat assures even chip distribution. Variable rake affords proper cutting edge for different materials. Landis chasers are useable for 80% of their original length. They are individually replaceable and, within the range of a given die head, a single set can be used for all diameters of the same pitch, form and taper.

4. PRECISION TAPERED THREADS—The Receding Chaser Pipe Machines are especially designed to cut tapered threads to meet A.P.I. requirements. Chasers recede into the die head at a rate equal to the taper of the thread, ensuring accurate and uniform taper along the full thread length.

LANDIS *Machine* CO. WAYNESBORO PENNSYLVANIA

JOHNSON SLEEVE BEARINGS AND BEARING METALS

ELECTRIC MOTOR



GENERAL PURPOSE CAST BRONZE

GRAPHITED CAST BRONZE

LEDALOYL SELF-LUBRICATING

ALL these types of bearings and both Johnson Universal Bronze and Johnson Quality Babbitt are available from stock at your local Johnson Distributor's. In fact, he is able to furnish practically all your sleeve bearing needs from his stock. There are over 400 sizes of Universal Bronze in cored and solid bars. The range of sizes in Johnson Cast Bronze GP (General Purpose) Sleeve Bearings has been increased to over 900 sizes. For special applications, Johnson Bronze will design and manufacture sleeve bearings to your requirements.

JOHNSON BRONZE COMPANY
550 South Mill Street, New Castle, Pa.

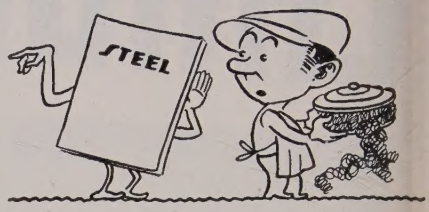
BABBITT METAL

Sleeve Bearing Headquarters Since 1901

JOHNSON B BEARINGS
Sleeve-Type

LETTERS
TO THE EDITORS

Trend Toward Standardization



We read with interest your "Windows of Washington" in the June 2 issue (p. 70). You mention that the Munitions Board contemplates standardization of air cleaners, reducing the number in use from 800 to only 6.

This company manufactures air cleaners, many models of which are directly or indirectly for military use. We were not aware that this standardization program had considered the air cleaner problem. We are vitally interested in the program and are anxious to work closely and co-operatively with the Munitions Board on it.

Frank Donaldson Jr.
Donaldson Co. Inc.
St. Paul

• *The man to contact is Russell A. Moody, director, Standards Agency, Munitions Board, The Pentagon, Washington. You can phone him on LIberty 5-6700, Ext. 61411.*

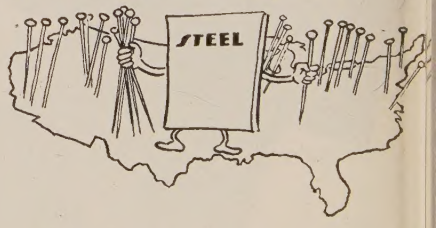
Detective Story

Can you help us locate an article which appeared in STEEL on a method General Motors Corp. is using to cut steel slugs for making shot. We have a similar problem for quantity production and feel sure that your description of the GM process would be of great help to us.

Theodore B. Smith
president
John Hassall Inc.
Brooklyn, N. Y.

• *We believe the article you're referring to is "Closing Research—Manufacturing Gap Brings About Major Production Economics" (Mar. 27, 1950, p. 66). Author of the article is R. J. Emmert of General Motors.*

Steel Expansion Pinpointed



Will you please send me a copy of STEEL's special report "Build-Up in Steel" (Mar. 3, p. 51). I am interested in information pertaining to the various major expansions in steel and their locations and I understand that report carries the information.

Matt Hala
Riverlake Belt Conveyor Lines Inc
Akron, O

• *You're right, and tearsheets are on the way.*

The Metalworking Outlook

July 21, 1952

After the Strike

Special directives for steel products urgently needed for military production and for tin plate and oil country tubular goods are being readied to take effect when steel production resumes. Part of the fourth-quarter advance allotments will be eliminated to reduce an unwieldy carryover. Emergency directives and super priorities will be held to a minimum if the recommendations of top steel men are followed. Inventory limits on steel will be reduced from the present 45 days to 30 days for some products and only three weeks on others.

Rumor- of-the-Week

Phil Murray announced some weeks ago his intention of stepping down as president of the Congress of Industrial Organizations for reasons of health. His successor: Harry S. Truman?

General or Special Purpose?

Watch for a try at pressuring the Air Force to limit models and types of airplanes in the interest of expediting production. It will be the old argument of special vs. general purpose planes again. Air Force probably will get its way but only after a hot fight.

Illegal Comfort

The Democrats may keep cool—physically, that is—in Chicago this week, but the government says it will be illegal. NPA officials say the Union Stockyard & Transit Co., which owns the International Amphitheatre, put in the cooling system without getting permission to use the controlled materials—about 40 tons of steel and 1100 pounds of copper.

Winter Ore Shipments

Lake shipments of iron ore during the winter months will not be feasible. This is the consensus of veteran lake shippers queried on Washington proposals to put a fleet of ice breakers at work on the lakes this winter in an attempt to lengthen the shipping season and reduce the deficit in ore shipments caused by the steel strike. Storms, iced equipment, frozen ore and reluctance of sailors to work on the lakes in winter, are some of the obstacles. The hazards to ships are great. All-rail shipments, although costly, are more practical.

Housing

Credit controls of housing will be relaxed by Oct. 1. June starts on non-farm homes fell to 106,000 or 25,500 below a year ago. Defense Production Act requires the down payment requirement be reduced if new starts fall below a seasonally adjusted rate of 1.2 million houses annually.

Caught in the Tide

Aluminum, whose long-term trend pricewise was downward, is about to bow further to the forces of inflation. Alcoa asked OPS for a price

oduction-Engineering News—p. 87 The Market Outlook—p. 153

increase of 2 cents a pound for pig and 10 per cent for fabricated and semifabricated aluminum. The request is based on increased cost of materials and labor, including anticipated labor costs in the 26-cent package raise signed with AFL's International Council of Aluminum Workers. OPS will call an industry-wide meeting of producers and fabricators of aluminum to discuss the price boost. A 2-cent increase would raise pig to 20 cents. In 1890, aluminum was $5 a pound; in 1893, $3; in 1900, 33 cents. In 1946, pig was down to 14 cents, from where it has edged up to the present 18 cents.

Abbreviating OPS, NPA

Sharp congressional cuts in stabilization funds and a reduced work load are shrinking staffs of the Office of Price Stabilization and the National Production Authority. Of 12,000 OPS employees, 6150 must be released by Sept. 1. NPA staffs are being cut by about one-third, and further cuts in the next 60 days will lower the number to about 60 per cent of the peak. Even after the reductions, total government employment (federal, state and local) probably will be above the World War II peak. It averaged 6,049,000 in 1943. In the first four months of 1952 it was 6.5 million.

Straws in the Wind

Public utilities, transportation and storage facilities led in that order in dollar value of certificates of necessity issued between Apr. 15 and June 20, while iron and steel expansion programs dropped from second to seventh place . . . The Facilities Review Board of DPA has handled 422 proposed defense expansion cases to date and has recommended alternate facilities in lieu of new construction in 61 of them . . . Hastily mobilized airframe production industry came up with an increase of 42.6 per cent in total sales for 1951 over 1950, but a 50 per cent decrease in net profits after taxes . . . Personal income in May this year was at an annual rate of $1 billion more than in April; private-industry wages and salaries rate, however, remained unchanged for that period . . . An up-to-date Russian-English scientific dictionary is the goal of a study to be made by Columbia University under a $39,300 contract from the National Science Foundation.

What Industry Is Doing

Epidemic of wage and contract demands in the metalworking industry will follow the steel settlement (p.59) . . . The steelworkers' strike cut steel output in June to the lowest monthly level since October, 1949 (p. 60) . . . The tool shortage is not over, its just more specialized (p. 61) . . . Employee stockholding plans are getting a second look (p. 62) . . . Another bumper crop of farm machinery will be sold this year (p. 63) . .. . Soldiers move out and industry moves in at Camp Reynolds, Va. (p. 70).

UNITED
MACHINE SCREWS
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If you are seeking a good source for your machine screw and tapping screw requirements with standard or special head designs in sizes ⅜" and smaller, you will find "UNITED" ready and able to fill your needs.

Machine screws and tapping screws are also made and carried in stock with the famous "Clutch-head" patented recessed head.

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United Screw and Bolt Corporation

Chicago 8 Cleveland 2 NewYork 7

PRODUCT AND PROCESS ADVANTAGES

increase demands for Ductile Iron

DUCTILE IRON PROVIDES mechanical properties which approach those of cast steel. In addition, it combines the *machinability and wear-resistance* as well as the *fluidity and castability* of cast iron.

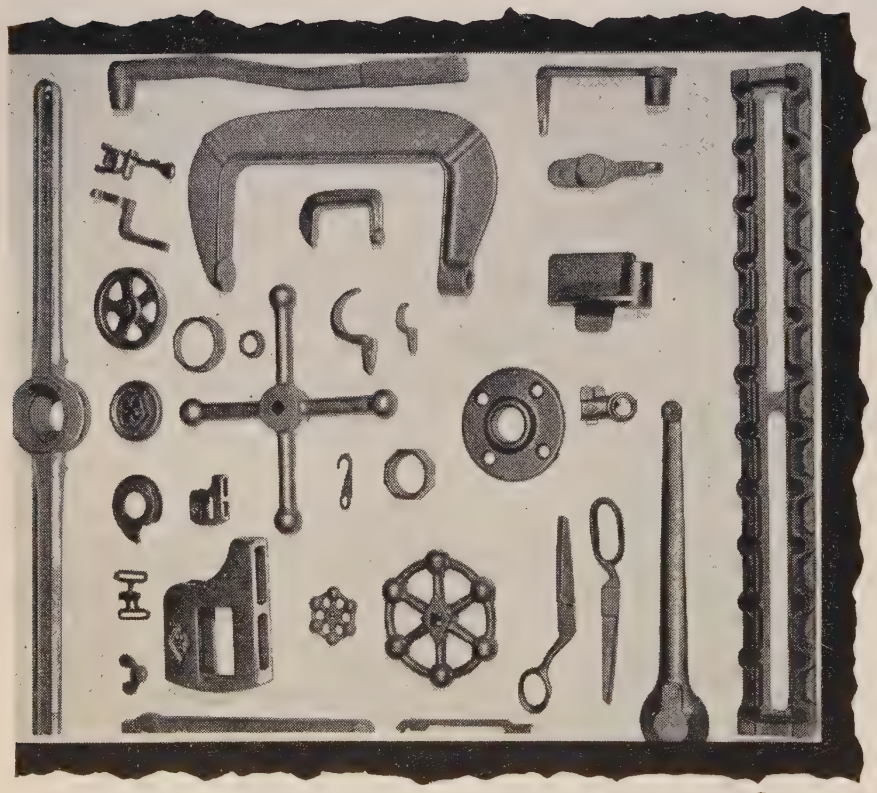
Presence of spheroidal rather than flake graphite not only gives this new material ductility that is unique among cast irons, but contributes much to its other exceptional properties.

REMARKABLE CHARACTERISTICS OF DUCTILE IRON

1. Its elastic modulus, about 25,000,000 psi, is virtually unaffected by composition or thickness...

2. It can provide a chilled, carbidic, abrasion-resistant surface supported by a tough ductile core.

3. As-cast ductile iron of 93,000 psi tensile strength has the same machinability rating as gray iron with a strength of 45,000 psi.



COURTESY OF ACME SHEAR COMPANY, BRIDGEPORT 1, CONN.

4. Annealed ductile iron can be machined at a rate 2 to 3 times that of good quality gray iron.

5. It can be satisfactorily welded.

6. It resists oxidation and growth to an extent never before available in gray iron castings.

7. It can be cast in intricate shapes not normally feasible for cast steel.

AVAILABILITY

Send us details of your prospective uses, so that we may offer a list of sources from some 100 authorized foundries now producing ductile cast iron under patent licenses. Request a list of available publications on ductile iron... mail the coupon now.

Ductile Iron offers excellent castability, high mechanical properties and good machinability. Castings show superior pressure tightness, good elastic modulus and resistance to shock. They range from those weighing a few ounces . . . with sections as thin as one-tenth of an inch . . . to 50-ton anvil blocks with sections 4' thick.

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Please send me a list of publications on: DUCTILE IRON

Name_____ Title_____ Company_____

Address_____

City_____ State_____

THE INTERNATIONAL NICKEL COMPANY, INC.

67 Wall Street, New York 5, New York

Now or Never

In the forthcoming campaign for election of a President we are confronted by a situation that is not new in character but is definitely new in degree and dimension. That situation centers around the terrific political influence of a party that has been in power for 20 years.

Time and time again throughout the past century we have witnessed a Republican or Democratic administration that has remained in office through several terms and has become arrogant and careless to the extent that the opposition party had little trouble in persuading the voters that a change would be wholesome. We need not be partisan in this. Either party too long in power is vulnerable.

But today there is a special reason for caution. At the time of our last Republican administration in 1932, our national debt was below $20 billion and government receipts and expenditures each was about $5 billion. At the present time the national debt is $260 billion, government expenditures are $70 billion and taxes are $60 billion.

This fantastic growth in federal government activity can be a tremendous factor in influencing the vote next November. Expenditures at the rate of $70 billion a year carry with them an infinite variety of opportunities for wooing votes for the party in power. Never before has the incumbent party had such an army of office holders and beneficiaries of patronage at its command as it has now. Already government employees are beginning their attack on the Republican nominee and taxpayers are footing a large part of the bill.

The sober fact is that this nation is dangerously close to the point where a party that remains in power too long can wield enough influence to perpetuate its hold on government. For this reason alone, next November's election will be vitally decisive.

If the party now in office wins again, the present too-powerful government will become more powerful, the task of the opposition to win in future elections will be made almost hopeless and the effectiveness of our priceless two-party system will be destroyed. It may be next November or never!

E. L. Shaner

EDITOR-IN-CHIEF

POLITICAL FOOTBALL: It is amazing how ballyhoo has kicked the Taft-Hartley Act right into the 50-yard line of 1952 politics. All that the labor union bosses needed to start their drive against Eisenhower was his statement that he would have used T-H in the steel strike. Last week Senator Russell said he was for repeal of T-H on the ground that it has

not been effectve. Averell Harry-man, of course, is for repeal of T-H.

In this political football game the principals sometimes forget the opinions of union members—the boys who pay the dues. They are not red hot against T-H. They are not too avid for the closed shop. In 1952 many of them will vote for Eisenhower against official union persuasion just as many of them voted for Senator Taft in 1950.

* * *

WHOSE RESPONSIBILITY? Under current laws, an employer is compelled to deal with any union that is certified by the National Labor Relations Board. In common with other manufacturers of electrical equipment, General Electric Co. has to deal with some unions which, while duly certified by NLRB, are definitely known to be dominated by communists.

This situation imposes a terrible threat to our national security and it raises the pointed question as to who is to take the initiative in weeding out communist influence in labor unions. General Electric's representatives appearing before the Senate Subcommittee on Labor-Management Relations argued that identifying and removing communists from unions is not the job of employers or union officers; it is the responsibility of the government. They conclude: "A competent government means should be provided for dealing promptly and efficiently with the guilty while dealing just as promptly and effectively in clearing the innocent."

* * *

TIME FOR EVALUATION: In the preface of the 36th annual report of the National Industrial Conference Board, President John S. Sinclair issues a word of warning to the effect that social benefits "must eventually be paid for—whether they come from business itself, from private agencies or from the government." He also believes we are entering a period when the recent emphasis on reckless spending is going to "be carefully and critically re-examined. This may give us an opportunity to consolidate the good developments of the past two decades and to weed out the undesirable ones."

Of particular interest to industrialists is the statement by Mr. Sinclair that this "present atmosphere of critical appraisal and evaluation has been immeasurably encouraged by the fine performance of American industry during and since World War II."

* * *

ENTERPRISE PAYS OFF: Greenville is a small community in western Pennsylvania near the Ohio line. During World War II Camp Reynolds, four miles distant, was a beehive of activity. After V-J Day its 2400 acres, large warehouses, railroad sidings and other facilities were designated for abandonment. Alert Greenville citizens formed the Greenville Businessmen's Association, a non-profit organization (p. 70), which in 1947 purchased 56 acres of land, the warehouses and railroad sidings. It rented some warehouse space to Westinghouse Electric Corp. and launched a campaign to attract other manufacturers to Greenville.

Today the association has expanded its holdings to 700 acres. It has brought to the former Camp Reynolds warehouses eight companies employing more than 1000 persons. The businessmen of Greenville (population 9150 in 1950) are demonstrating what can be done when enterprising citizens work together for a worthy cause.

* * *

FOR AIR CONDITIONING: Every now and then several seemingly unrelated events occurring within a brief space of time combine to throw the spotlight upon some favored material, process or equipment. Right now the development which is the beneficiary of priceless publicity is air conditioning.

Installation of a cooling system in the International Amphitheater was an important factor in inducing the Republican and Democratic parties to choose Chicago for their 1952 conventions. This fact, known to almost every citizen, is causing every major city with convention facilities to reconsider the possibility of air conditioning its exposition hall.

When the S. S. United States established new speed records for eastward and westward crossings of the Atlantic, many of the attendant news dispatches of these feats stressed the fact that the new vessel is completely air conditioned. On a hot and humid day last week, General Motors' President Charles E. Wilson announced that next year Oldsmobiles and Cadillacs will be available with air conditioning units.

What a break for air conditioning!

An Invitation

TO GUARANTEE SAVINGS TO ANY FABRICATOR OR MANUFACTURER OF MACHINERY

If, by WELDESIGNING, a properly designated man in your business cannot make savings greater than his salary, The Lincoln Electric Company will make up to you in cash the difference between such savings as are actually effected and the salary of the man designated to do the development work.

The following terms and conditions to govern this offer:

1. You will advise The Lincoln Electric Company of your desire to accept this offer.
2. You will employ or designate in your own organization a man who both you and The Lincoln Electric Company agree upon as qualified to carry on development work by arc welding.
3. This man so designated will devote his entire time to this development work.
4. You will give authority to the man so designated to proceed with the design, development and manufacture or fabrication by means of arc welding, of products or parts of products manufactured by you.
5. The man so designated and his work are to be accessible at all times to Lincoln development engineers for consultation and suggestions.
6. Your regular cost accounting system, or variation thereof as agreed upon between us, is to be applied to his work over a period of two years. If at the end of such period your records do not show savings over former methods, greater than the salary of the man so designated above, The Lincoln Electric Company will pay you in cash the difference between such savings as are actually effected, and the salary of the man, this amount under any conditions not to exceed the salary of the man.

THE LINCOLN ELECTRIC COMPANY

J. F. Lincoln

President

R. S. V. P.

JAMES F. LINCOLN

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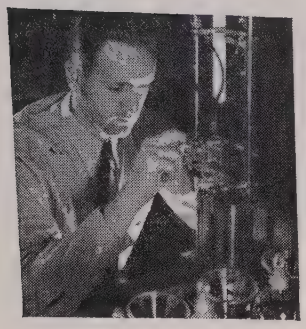
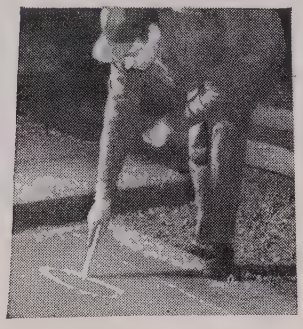
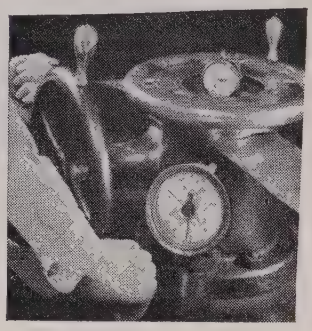
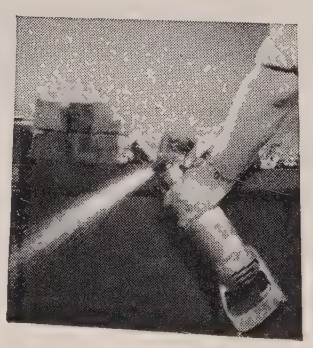
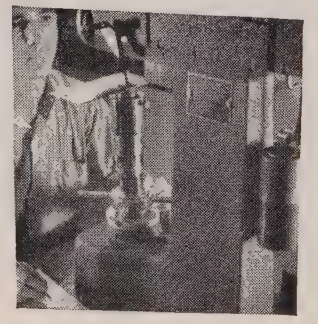
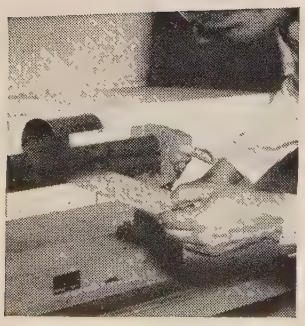
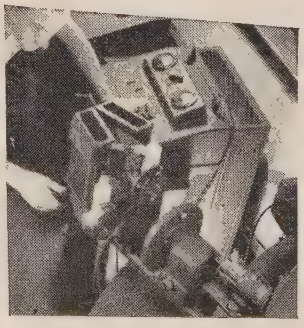
Our customers know that Inland

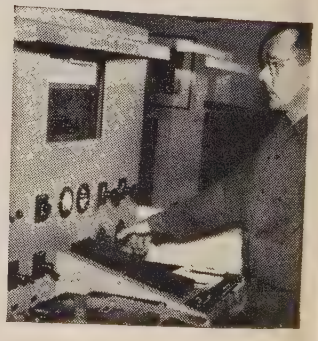




keeps steel quality consistently high..

These checks...made all through



production...demonstrate how.

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38 South Dearborn Street, Chicago, 3, Illinois

Wage Drive: Fabricators Next

Epidemic of demands will follow closely on heels of steel settlement. It will include wage increases, paid holidays, liberalized vacations, increased shift differentials

WATCH for a rash of wage and contract demands to break out throughout the metalworking industry just as soon as the steel wage-union shop settlement is wrapped up.

Many labor agreements expiring since January have not yet been renewed. The unions involved are reluctant to sign new contracts until they see what the United Steelworkers win from the basic steel companies. As soon as the new steel contracts are signed, these unions will be pounding on their employers' doors with demands for benefits similar to those granted the steelworkers. And they then will want them in a hurry.

Likely Demands—Four demands will be common in the metalworking labor negotiations. All will be taken from the basic steel settlement. They are:

1. A wage increase comparable to that given steelworkers. The companies' latest offer is for 12½ cents an hour across the board, plus a half-cent increase in the job increment, or an average money wage increase of 16 cents an hour.
2. Six paid holidays.
3. Three-week vacations after 15 years.
4. Increase in shift differentials.

Down Payment — Most metalworking companies have made wage adjustments since the last previous steel wage contract was signed late in 1950. They have, in effect, made down payments against the demands they will face as an aftermath of the steel settlement.

Nevertheless, some of the unions will ask for a wage-fringe benefit package comparable to what the steelworkers will receive this year. They won't get it.

The steel settlement package offered by the companies costs about 24.6 cents to the companies, provides direct increases equivalent to about 22 cents an hour to the worker. The difference represents increased costs of social insurance, pensions and similar costs that do not show up in the worker's pay envelope.

Your unions may ask but will not expect to receive the full steel settlement package if they already received upward adjustments since December, 1950.

Security—Industrial relations directors do not expect the unions to make an important issue over the union shop or other union security issues in dealing with the smaller plants this year. Any concessions won from the basic steel companies on union security, of course, will show up in later contract negotiations with the smaller companies.

The little publicized management issues—the who's-going-to-run-the-business issues—which have caused more trouble in the steel negotiations than is generally realized will be less important in the metalworking negotiations. These again are part of a long-range union program and will bob up as troublesome issues in the future.

Strike Loss: It Hurts

Steel strike losses at the end of last week totaled 13.5 million tons of steel. The loss indicates 1952 production will be the lowest since 1949 despite a vastly increased capacity.

The really deep cuts in production by metalworking companies and in defense production lie ahead. Steel inventories in metalworking plants have been pretty

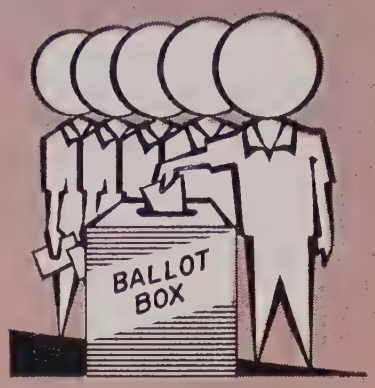
What Price Union Shop?

Steel Strike Cost: June 2 to Date

TO THE STEELWORKER:
$557.20 in lost wages

TO THE STEEL USERS:
13.5 million tons of lost ingots

TO THE ECONOMY
$3.2 billion in total lost sales, wages



The Editors Poll the Workers

NINE OUT OF TEN steelworkers want to accept the steel companies' latest offer and go back to work. Only a handful want to continue the strike to win the union shop.

Those are highlights revealed in a STEEL survey of 530 steelworkers representing all the major steel companies in the Youngstown district.

Unsolicited comments by union members: "To hell with the union shop;" "Union shop is contrary to the Bill of Rights;" "It should not be granted in any form;" "It's unconstitutional."

ARE YOU A MEMBER of the United Steelworkers of America—CIO?

YES	NO
79%	21%

IF THE WAGE ISSUES are satisfactorily settled, would you be in favor of continuing the strike in an effort to win full union shop?

YES	NO
16%	84%

ARE YOU IN FAVOR of returning to work on a settlement based on the steel companies' latest offer (a wage increase package of about 22 cents an hour and a modified union shop)?

YES	NO
90%	10%

well depleted and cannot be rebuilt to a good working level quickly.

When the mills reopen, a portion of steel production will be allocated to defense projects considered urgent. Civilian consumer goods producers will have to wait.

Defense Output Hit—Impact of the steel strike began to show up seriously in defense production last week. Tool deliveries which were just beginning to hit their schedule likely will be fouled up for several months. The Air Force says its production program will be thrown off schedule. Steel castings for tank turrets will be especially short in the four quarter.

Lag—A week to 10 days is required to restore full operations after a strike. Even then the products you need may not be rolled for several weeks, depending on your supplier's rolling schedule. Under optimum conditions it may be late fall or winter before many plants can again achieve balanced stocks.

Deflation—The average steelworker already has lost almost $600 in wages due to the strike. This loss in personal purchasing power is expected to exert a deflationary influence on the economy which at least partially will offset the scarcity and inflationary factors of the strike.

It's possible that fall production schedules won't require so much steel.

USA Drives on Lake Seamen

A drive by the United Steelworkers of America-CIO to organize the crews of lake freighters carrying ore to the steel mills is underway. Results to date are difficult to evaluate.

Crew members on lake freighters traditionally have received unionization drives coldly. They just don't want to join a union. When the boats are in operation there is little chance for union organizers to work on the crew members. As a result, various attempts to organize the lake seamen have met with indifferent success.

The steel strike combined with the sympathy strike of the ore miners caused practically all of the lake freighters to be tied up. The crews thus were made more easily accessible to union organizers.

Post-Strike Allocations?

Task group maps program to supply urgent needs with minimum disruption

A MIDDLE of the road report on procedures to be followed when steel production is finally restored will be presented to the Steel Products Advisory Committee at a meeting scheduled with NPA officials this week. The report is the result of a two-day meeting of a task group headed by Richard F. Sentner of U.S. Steel.

NPA is worried about how to handle a carryover, now expected to exceed 17 million product tons when steel production is finally restored. Officials recognize that mill schedules could be messed up if the use of emergency directives and super priorities were not held to a minimum.

Alumni Called In—As a result there was an SOS to three ex-administrators of the iron and steel division: Mr. Sentner of U. S. Steel, Wallace B. Quail of Armco and Herbert Johnson of Jones & Laughlin. Other members of the Task Group are Allison R. Maxwell of Pittsburgh Steel and James Hamilton of Granite City. Mr. Hamilton and Mr. Maxwell represent the viewpoint of mills now open. Both of their companies have settled with the union.

The Plan—The Task Group sifted out proposals which range from a plan to give the military a super priority and a set-aside of mill space to plan to get rid of at least a substantial part of the unwieldly carryover. In general the plan is said to call for the following:

1. The use of production directives to assure the making of forms and shapes needed to meet urgency requirements.

2. Adjustments of melting schedules to assure maximum production.

3. Elimination of at least a part of the fourth quarter advance allotments so that supply and demand can be balanced as quickly as possible. This, it is expected, will require substantial rescheduling of programs and deliveries.

4. Emergency directives to handle tin plate and oil country tubular goods.

Defense Output Cut — In the meantime, Defense Department officials say that all of the military programs have been slowed and some stopped. Hit the hardest have been ammunition, aircraft landing gear, Bailey bridges, landing craft and guided missiles.

The Strike: A Heavy Blow on Steel Production

THE STEELWORKERS' strike cut steel production in June to the lowest level for any month since October, 1949, and the first half year's output to the smallest amount for that period since 1948.

June production is estimated by the American Iron & Steel Institute at 1,639,000 net tons of steel for ingots and castings. In October, 1949, which too was marred by a steelworkers' strike, output was approximately 925,000 tons.

In June, steelmaking furnaces were operated at only 18.4 per cent of capacity. Details below:

	OPEN-HEARTH		BESSEMER		ELECTRIC		TOTAL		Calculated weekly production (Net tons)	No. of weeks in mos.
1952	Net tons	% of capacity	Net tons	% of capacity	Net tons	% of capacity	Net tons	% of capacity		
January	8,102,123	100.7	407,298	89.3	625,696	89.7	9,136,117	99.3	2,062,329	4.43
February	7,703,066	102.4	382,712	89.8	571,432	87.6	8,657,210	100.7	2,091,114	4.14
March	8,401,140	104.4	378,861	83.1	624,190	89.5	9,404,191	102.2	2,122,842	4.43
1st Qtr.	24,207,329	102.5	1,168,871	87.4	1,821,318	89.0	27,197,518	100.7	2,092,117	13.00
April	7,101,199	91.1	323,006	73.2	566,937	83.9	7,991,142	89.7	1,862,737	4.29
†May	7,287,000	90.5	318,000	69.7	596,000	85.4	8,201,000	89.1	1,851,000	4.43
†June	(a)	....	(a)	....	(a)	....	1,639,000	18.4	3,820,000	4.29
†2nd Qtr.	.....	....	.....	....	.....	....	17,831,142	66.0	1,370,572	13.01
†1st 6 Mos.	.....	....	.....	....	.....	....	45,028,660	83.3	1,731,206	26.01
1951										
May	8,072,994	104.4	408,650	85.6	618,511	96.4	9,100,155	102.8	2,054,211	4.43
June	7,669,449	102.4	403,001	87.1	589,898	94.9	8,662,348	101.0	2,019,195	4.29
2nd Qtr.	23,601,282	103.9	1,204,123	85.9	1,803,077	95.7	26,608,482	102.3	2,045,233	13.01
1st 6 Mos.	46,446,278	102.8	2,370,886	85.0	3,486,821	93.0	52,303,985	101.1	2,021,801	25.87

Note—The percentages of capacity operated in 1952 are calculated on weekly capacities of 1,816,637 net tons open-hearth, 102,926 net tons bessemer and 157,477 net tons electric ingots and steel for castings; total 2,077,040 net tons; based on annual capacities as of Jan. 1, 1952, as follows: Open-hearth 94,973,780 net tons; bessemer 5,381,000 net tons; electric 8,232,890 net tons; total 108,587,670 net tons. The percentages of capacity operated in 1951 are calculated on weekly capacities of 1,746,337 net tons open-hearth, 107,806 net tons bessemer, 144,891 net tons electric ingots and steel for castings, total 1,999,034 net tons; based on annual capacities as of Jan. 1, 1951, as follows: Open-hearth 91,054,020 net tons, bessemer 5,621,000 net tons, electric 7,554,630 net tons; total 104,229,650 net tons.

† Preliminary figures, subject to revision. (a) Not available.

Tool Shortage: Not Over, but Specialized

Army services in fair shape for general purpose tools, but squeeze still is on for many special purpose tools. Cancellations to be controlled by military

THE MACHINE tool shortage isn't over. It is infinitely more specialized.

That, in essence, is the story of the Air Force which is trying to find the basis for the widespread reports of cancellations. It asked its contractors to report by July 9 but it will be sometime before reports are available.

There have been some cancellations, mostly in cases where, because of the stretchout, the facility is no longer needed as part of the mobilization base. There have been others where the tool has become obsolete because of new designs or basic changes in the program with the result that no use of the tools can be made.

Slow Cancellations—While originally contractors had the privilege of canceling machine tool contracts, the Air Force has stepped in. Now all cancellations must clear Wright-Patterson Field and officials say they are being held to a minimum, although they concede there will be a few more.

Major procurement still to take place is the tooling by Ford at Chicago for the J-57. There will be some cancellations, however, for the reciprocating engine contract held by Ford. Air Materiel officers say that the Air Force is now in good shape as far as general purpose tools are concerned. There is still a squeeze for special purpose tools, particularly of the large variety.

In Demand—Some of the machines which they are having trouble obtaining are: Skin millers, stretch presses, profiling machines, die sinking machines, large standard horizontal and vertical millers, automatic screw machines, large stand mills, jig boring machinery, large grinders.

Air Force officials say that the reports that shortages had been created because of contractors insistence on one trade name tool or another were exaggerated. They said that contractors had been most co-operative in using substitutes. They have tapped the Air Force Reserve and the used market before buying foreign tools, largely on the theory that the domestic tools were easier to keep running because of the availability of parts and equipment and interchangeability.

Tool deliveries are now said to be running between 7000 and 8000 a month with the Armed Forces getting 70 per cent of the total output. The Air Force obtains from 3000 to 3500 tools. Average cost is $15,000 per tool.

Gas Industry To Set Record

Distributors of gas and the gas pipeline industry will spend a record $5.6 billion on new construction and expansion of present facilities in the five years 1952 through 1956, estimates the American Gas Association. The previous high was $5.1 billion spent in the preceding five years, 1947-1951.

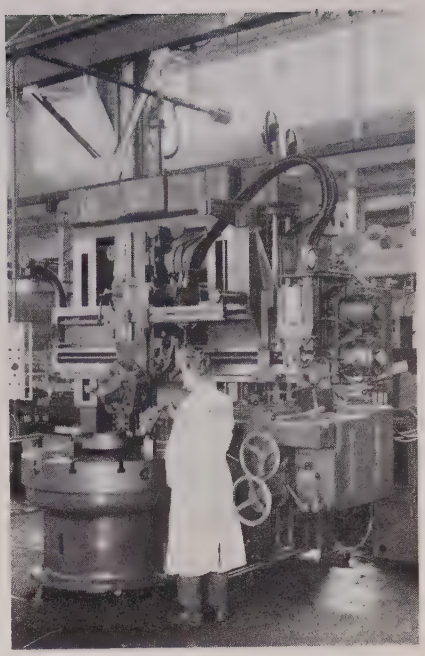
Of this total, industries in the natural gas category will spend about $5.1 billion; about $3075 million will go for transmission facilities, $415 million for production, and about $82 million will be spent on underground storage.

This year, the gas industry will spend an estimated $1170 million on construction—slightly under the 1951 peak year of $1461 million. The association expects the industry to reach a new spending peak of $1681 million in 1953, with some slowing down in expenditures later.

Artificial Graphite Expands

Interim expansion goal for artificial graphite would bring the industry's annual production capacity to 352 million pounds by July, 1954, says the Defense Production Administration. This goal represents an increase of 149.4 million pounds over the annual capacity of 202.6 million pounds on Jan. 1, 1951.

Principal use of artificial graphite is in electrodes for electric arc or resistor furnaces in electric-furnace steel production.



King Celebrates 50 Years

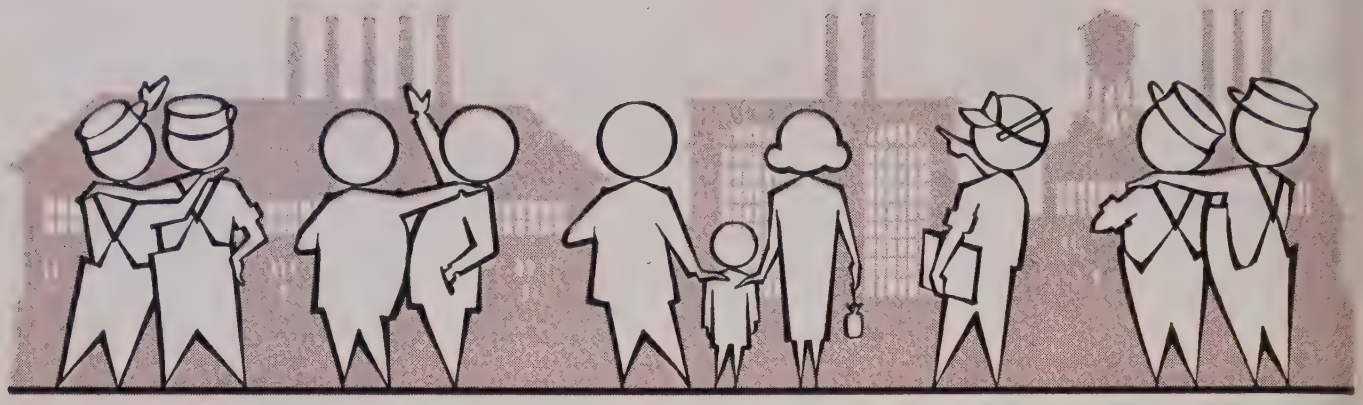
King Machine Tool Division of American Steel Foundries this year enters its second half-century of production. Founded in 1901, the firm manufactures vertical boring and turning machines in 10 sizes, from 30 inches to 144 inches. The machine above is a 52-inch King "New Series" with right-hand swivel turret, right-hand side-head, three jaw combination chuck

Du Pont Passes 150th Year

One of the nation's oldest firms, E. I. du Pont de Nemours & Co. Inc., celebrated its 150th anniversary on July 18 with ceremonies at the site of the original Du Pont mill in Wilmington, Del.

Crawford H. Greenewalt, president of the company, addressed an audience of about 7000 invited guests. The speech was carried on a nation-wide radio network also. Mr. Greenewalt praised the founder, Eleuthere Irenee du Pont, for his initiative in a time when he was "free to undertake the risks, carry the burdens and reap the rewards." He said that present-day Du Pont workers to meet the challenge of that same venturesome spirit, zeal and determination must have the same conditions of freedom, incentive and initiative.

Walter S. Carpenter Jr., chairman of the board and a former president of the company, dedicated a marker formed by one of two huge millstones ordered from France by the founder for the first mill.



Employee Stockholding: Capital-Labor Tie

Employee stockholder plans, popular during the twenties, faded with the crash and establishment of the SEC. But today many firms are giving the plan another look

WHEN TICKER TAPE battered financial empires to rubble on that sepia Tuesday in October of '29, the shattering of even a good idea could hardly be noticed. It was an idea that had reduced labor turnover, drawn workers to assembly lines in a time of job abundance and reduced the number of strikes—the employee stockholder plan.

The modus operandi: Permit employees of the firm to purchase shares of stock at a discount, often through a payroll deduction plan, or present shares to them as part of profit sharing or bonus systems. The hypothesis: If a worker owns part of the corporation, his personal stake in its success increases and consequently his production incentive. The idea fitted the times like a hip flask in a knickers' pocket until the crash.

New Interest—Since that time some firms have revived the practice. Others, particularly those in relatively stable businesses, continued the plan right along. But today firms with the plan are in the distinct minority and the employee who wants to buy his company's stock normally has to see his broker just like anybody else.

The idea hasn't been forgotten. With a job abundance situation paralleling the twenties in which the plan worked well, many firms are giving the scheme careful consideration. But many aren't convinced it's a good idea any longer; others say it's better than ever.

Casualty of SEC — For many firms, feasibility of the plan went down the drain like bathtub gin—through Roosevelt legislation. The establishment of the Securities & Exchange Commission in the early days of the new deal administration to safeguard the interest of stockbuyers and prevent a recurrence of the debacle that hit Wall Street in 1929 makes the operation of an employee stock purchasing plan a complicated proposition. Many firms figure the red tape just isn't worth snipping.

Other firms point out that if stocks fall employees may blame management for their diminished investment and foster an unfortunate reaction.

Charleston Kick — Despite the headaches, many companies feel the employee stock purchase plan has the psychological kick of the Charleston and they've brought it back. One example is Leeds & Northrup, Philadelphia, which cites the fact that it has never had a strike. All voting stock is owned by 16 per cent of its 3000 employees or their spouses as well as a large share of the non-voting stock, and all non-voting stock not held by employees is held by relatives of employees or beneficiaries of their estates.

This employee ownership is encouraged by pointing out the advantage to employees in keeping the company employee-owned. They are also acquainted with the company's financial affairs and the earnings of its stock as well as problems of management and control. Through its voting trust arrangement, the firm feels it has the advantages of a partnership within a corporate framework, and through employee ownership nearly all of the earnings of the company are retained for employees active in the company's affairs.

Leeds & Northrup thinks employee ownership enables management to work more closely with employees and understand their problems and needs more fully; that means little conflict of interest between management and employees.

***PLANNING** to sell stock to your employees? Here are five things to know before getting in touch with the Securities & Exchange Commission:*

1. Number of employees to whom the stock will be offered
2. Residences of the employees (are any from out of state?)
3. Total value of amount of stock to be sold (there are two possible types from the standpoint of SEC filings—one has a maximum of $300,000 based on market price, the other is in excess of this amount)
4. Does the company have stock authorized but unissued, or must it buy it on the open market?
5. Copies of proposed plan and letters to employees

IN ADDITION, everything should be cleared with the state securities division and finally with the Internal Revenue Department. The latter is important if the employer makes a contribution toward the cost of the stock.

Fertile Field for Sales

Farmers need more machines as each year they feed more people with less help

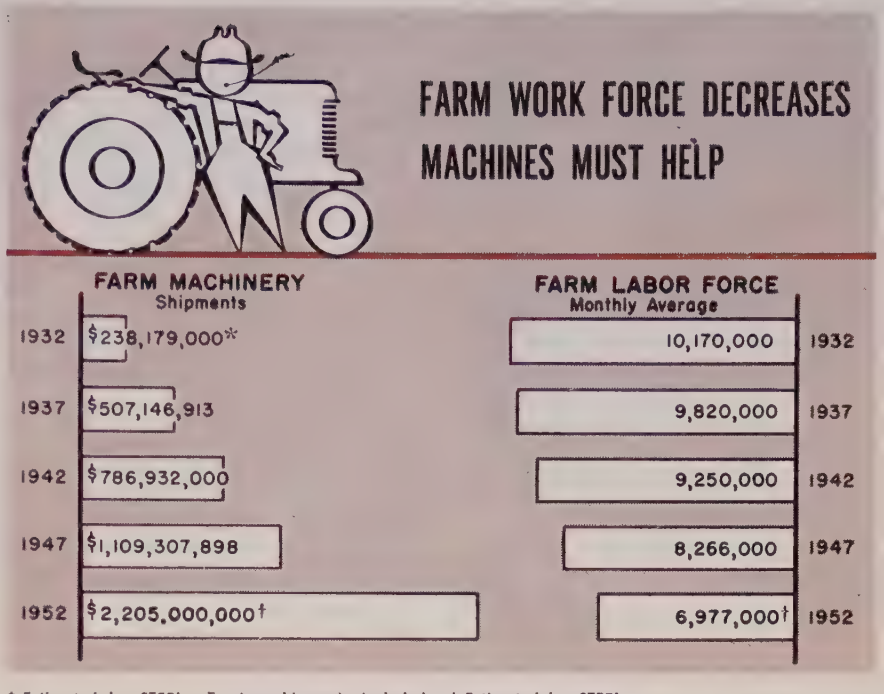
ANOTHER BUMPER CROP of farm machinery will be sold this year, despite the blight of the steel strike which is expected to curtail production and sales in the second half. Sales won't fall much below the $2.2 billion level reached last year.

That's because demand is strongest for heavier, more expensive, and incidentally, more automatic, pieces of farm equipment. One Ohio dealer reports only fair sales of light tractors and balers, but phenomenal sales of a certain type of self-propelled combine, costing $4200 retail. Also in demand are large tractors, automatic balers, corn pickers and cotton pickers.

Ahead Up to Now — Up until June, most manufacturers were running 5 to 10 per cent ahead of last year's production, others were holding even. They're predicting, now, that any gains over last year's output will be wiped out in the second half by the steel strike. Even in that event, 1952 will not be a bad year since 1951 saw record-setting shipments of farm machinery.

An indicator of how mechanization has gone down on the farm to stay is the lack of demand for used horse-drawn equipment. Used farm equipment dealers report a steady market for overhauled, sold-on-guarantee, motor-powered machines, but the rigs old Dobbin used to haul around are a drug on the market. The value of all types of used equipment sold by the average dealer jumped from $9000 in 1947 to $36,000 in 1951, says the National Retail Farm Equipment Association, St. Louis. During the same period, the value of new farm equipment sold by the same average dealer rose from $103,000 to $145,000 says NRFEA.

Suited to Needs—Smaller companies in the farm equipment industry hold their own against mass-production type giants by specialization. The small firm usually makes some particular type of equipment for a particular type of farm. For example, approximately a dozen small makers on the West Coast manufacture tillers suitable for that area's farming only.



* Estimated by STEEL. Foreign shipments included. † Estimated by STEEL.

Social trends seem to assure farm equipment makers, large and small, a prosperous future. For the last 20 years the farm work force decreased while mechanization on the farms increased (see the chart). Forecasts by the Agriculture Department predict that the exodus from the farm will continue, citing 400,000 fewer farms in the U.S. by 1970. By that time, 38 consumers will depend on each farm for their food; current ratio is 28 persons to 1 farm. Machines, and more machines, will be needed if fewer farmers, cultivating fewer acres more intensively, are going to support a bigger population.

Aluminum: Ample in '53

Supplies of aluminum should be ample for both military and most civilian needs by the second quarter of 1953, says Henry H. Fowler, Defense Production Administrator, commenting on Issue No. 7 of DPA's *List of Basic Materials & Alternates.*

"Availability of aluminum is improving steadily, and—barring unexpected emergencies — supplies should be ample at least by the second quarter, next year. Meanwhile, DPA plans to resume stockpile deliveries in the fourth quarter, 1952."

Copper will continue to ease, but not to the extent expected of aluminum. With the resolution of the Chilean price negotiations, enough copper will be on hand for the defense program if U. S. consumers purchase up to the limit set by the International Materials Conference. But civilian industries will get only slight increases in copper allotments.

"The outlook for steel supplies is less clear," says Mr. Fowler, "as DPA's list was compiled before the strike, and a prolonged strike only would accentuate the shortages in specified steel."

Glass Fiber Relieves Shortage

A newly developed glass fiber is being mixed with asbestos in the carding process to produce certain types of insulating material, thus helping to relieve the severe shortage of crude asbestos fiber. Almost all U.S. needs of asbestos fiber must be imported.

The glass-asbestos insulating cloth will be used first by the Navy in its carrier conversion and ship repair program. "As production of the new material increases," says Ray Coultrap, chief of NPA's Asbestos and Fibrous Glass Section, "it will become available for various other defense and civilian uses."

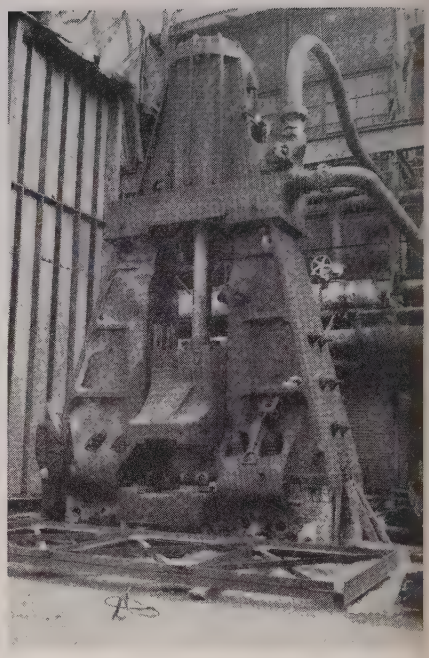
Authenticated

The Small of It . . .

The tiniest of all incandescent light bulbs to be assembled with automatic machinery at General Electric Co. are these No. 327 miniature lamps being inspected under a magnifying glass. GE production experts, after two years of effort, eliminated a potential bottleneck in military plane output by speeding up the production of the lamps which illuminate control panels

. . . And the Large

Two huge forge hammers, one of them shown at right, are part of a program which will add more than 100 million pounds to the yearly production potential at Willys-Overland Motors Inc. forge shop in Toledo, O. Nine other hammers will help bring the firm's production to about $40 million annual value, company officials say



Small Firms May Benefit From SDPA Pools

SMALL FIRMS—often lost in the shuffle when defense contracts are awarded—may find some encouragement now that the Small Defense Plants Administration has authority to establish production pools.

Under the previous authorization setup, companies desiring to pool their facilities on government contracts and subcontracts had to get the green light from the Defense Production Administration. To speed up pool authorizations SDPA now has the final word.

SDPA may approve a small business production pool after receiving permission from the attorney general and consulting with the Federal Trade Commission, as required under the Defense Production Act. These are the same steps required of DPA, but it's expected that a considerable amount of time will be saved by letting the smaller organization make the final decision.

DPA still retains parallel authority to set up production pools in special cases to meet any emergency needs of the defense program.

The first defense production pool now in operation was set up a year ago, prior to establishment of SDPA. Since then, 15 pools have been approved. During World War II about 2000 small firms were organized in 250 production pools to share defense contracts and subcontracts.

If lack of sufficient defense subcontracts is one of your procurement problems, check over the table at the bottom of the page. It's a selection of the latest contracts awarded by the government to metalworking firms. Each contract is valued in excess of $250,000.

Defense Contractors Must Wait

Defense contractors will continue to be at the mercy of procurement officers or their department heads in decisions on cost and all other controversial points arising under defense contracts through an omission during the rush to adjourn Congress.

The Senate passed a bill giving contractors the right of court appeal. The Supreme Court subsequently denied them that right in the Wunderlich and Moorman cases. Remedial legislation was approved by the House Judiciary Committee but the measure died on the House calendar.

Favorable action probably will be taken at the next session.

Signal Corps Unwraps New Cable

"Spiral 4," a new type of telephone and telegraph cable developed by the Army Signal Corps, promises to save 16.5 million pounds of copper and $18 million in production costs a year, says the Defense Department.

Reduced size of copper strands, plastics in place of rubber, stainless steel instead of regular steel and simplified manufacturing processes will account for the substantial savings. The new cable can carry three times as much traffic as the type it replaces, too.

PRODUCT	CONTRACTOR
Grinders, Surface	Gallmeyer & Livingston Co., Grand Rapids, Mich.
Lathes	Warner & Swasey Co., Cleveland
	Bullard Co., Bridgeport, Conn.
Trucks	Ross Carrier Co., Benton Harbor, Mich.
Compressors, Air Truck	Davey Compressor Co., Kent, O.
	Westinghouse Air Brake Co., Industrial Products Div., Wilmerding, Pa.
Guns, T80, 155 mm	Hughes Gun Co., Houston
Shells, 105 mm	York-Shipley Inc., Industrial Div., York, Pa.
Shells, 81 mm	Nesco Inc., Milwaukee
Shells, Mortar	Scaife Co., Oakmont, Pa.
Shot, 76 mm	National Supply Co., Pittsburgh
Heads for Rockets	National Tube Div., U. S. Steel Co., Pittsburgh
Teletypewriter Sets	Teletype Corp., Chicago
	National Cash Register Co., Dayton, O.
Switchboard Units	Leich Electric Co., Genoa, Ill.
	Stromberg-Carlson Co., Rochester, N. Y.
Amplifiers	Belmont Radio Corp., Chicago
Tube Testers	Supreme Inc., Greenwood, Miss.
Public Address Sets	David Bogen Co. Inc., New York
Refrigerating Units	Keco Industries Inc., Cincinnati
Heaters, Immersion	Peoria Consolidated Manufacturers Inc., Peoria, Ill.
Lanterns, Gasoline	Coleman Co. Inc., Wichita, Kans.
Sewing Machines	Singer Sewing Machine Co., New York
Pumps, Water	L. C. Products Co., Indianapolis

CHECKLIST ON CONTROLS

GOVERNMENT control orders are digested or listed each week in this "Checklist on Controls." For complete copies of NPA orders, write to NPA Distribution Section, First Basement, New GAO Bldg., Washington, 25. For copies of OPS orders, contact nearest OPS district or regional office. For copies of OPS news releases, write David S. Phillips, director, OPS Administrative Services Division, Temporary E Bldg., Washington 25.

Materials Orders

CONSUMER DURABLES — Amendment of July 14, 1952, of NPA Order M-47B permits makers of consumer durable goods to use for the first time their controlled materials allotments with complete interchangeability. Interchange of allotments heretofore was permitted only among products listed in the particular group to which allotments were made. The distinction is being wiped out because of the greater availability of copper and aluminum for third-quarter allotment. Complete freedom for shifting allotments among any items listed under the order now prevails. The amendment was effective July 14, 1952.

OIL COUNTRY GOODS—Schedule 2 to Direction 1 to NPA Order M-6A places temporary restrictions on delivery of oil country casing and tubing to assure the use of this material to meet exploratory drilling and normal military and defense rated orders only. Schedule 2 was issued July 16, 1952, and made effective on that date.

Controlled Materials Plan

WAREHOUSE STEEL—Amendment of July 15, 1952, of Direction 12 to CMP Regulation 1 authorizes makers of consumer durable goods to accept delivery of those particular types of the limited stocks of steel controlled materials now held in warehouses but not needed for military production. The amendment was effective July 15.

NPA Delegation

CONSTRUCTION — Policy Memorandum No. 2 under NPA Delegation 14 permits the commencement of construction where an applicant has enough carbon steel on hand to complete his project. It applies to all types of construction except recreational, entertainment and amusement. Previously, the owner could not use controlled materials in inventory without an allotment unless the materials were acquired before Oct. 1, 1951. The policy memorandum was issued July 9, 1952.

NPA Regulation

STEEL—Direction 5 to NPA Regulation 2 permits producers of steel and products containing steel, who have received individual directives from NPA, to postpone specified delivery dates where the dates cannot be met because of the steelworkers' strike. Direction 5 was issued July 10, 1952, and made effective on that date.

Price Regulations

STEEL WAREHOUSES — Amendment 4 to Ceiling Price Regulation 98 authorizes certain steel warehouses to charge their customary warehouse price even though they are unable, because of the steel strike, to perform completely the warehousing services. Amendment 4 was issued July 9, 1952, and made effective on that date.

FABRICATED STEEL—Ceiling Price Regulation 156, issued July 10, 1952, is a tailored pricing regulation for fabricators of structural steel, miscellaneous and ornamental iron, and vessel shop products for field assembly or erection. It involves no change in price levels. CPR 156 was effective July 15, 1952.

CONSUMER DURABLES — Supplementary Regulation 30 to Ceiling Price Regulation 22 provides a method whereby manufacturers of certain consumer durable goods items may apply to have ceiling prices established under CPR 22 for sales on an f.o.b. shipping point basis translated into ceiling prices for sales on a delivered basis. SR 30 was issued July 14, 1952, and made effective on that date.

Fast Worker

This towering mine hoist, which delivers eight tons of coal to the surface every 36 seconds, is in operation at the Farmersville, Ill., Crown Mine of Freeman Coal Mining Corp. Driven up and down the 491-foot shaft by General Electric apparatus, it has a rated speed of 1357 feet per minute. With two skips weighing seven-and-a-half tons each, the hoist was made by Vulcan Iron Works, Wilkes-Barre, Pa.

Appointments in Washington

John E. Timberlake, general manager of sales, Jones & Laughlin Steel Corp., Pittsburgh, was appointed deputy director, Iron & Steel Division, National Production Authority.

Harry S. Mills, Warrenton, Va., formerly chief of the Program & Requirements Branch of the General Components Division, was named deputy director, General Industrial Equipment Division, National Production Authority.

Joseph F. Miller, Deal, N. J., formerly counsel for the Copper Division and the Tin, Lead & Zinc Division, was appointed deputy director, Copper Division, Metals & Minerals Bureau, National Production Authority.

Frank F. Cservenyak was named chief, Light Metals Branch, Bureau of Mines, and Delwin D. Blue was appointed assistant chief.

John W. Mohler, Caterpillar Tractor Co., Peoria, Ill., was appointed director, Construction Machinery Division, Industrial & Agricultural Equipment Bureau, National Production Authority.

Wilbur S. Hinman was named associate director, National Bureau of Standards, in charge of all ordnance development. The three ordnance development divisions of the bureau are headed by M. G. Domsitz, Jacob Rabinow and Dr. Harold Goldberg.

Jeter S. Ray, formerly associate solicitor, Labor Department was appointed chief counsel, Office of Salary Stabilization.

John Carroll Morrissey, formerly chief counsel for the Research & Development Board and the Military Liaison Committee, was named associate general counsel, Defense Electric Power Administration.

Small Firms Get Expansion Aid

Small firms are given 30 days in which to file applications to participate in expansion of two industries under the government's rapid tax amortization program.

The small business share of the precision and large size fasteners expansion goal is set at 30 per cent, with small firms defined as those with 300 employees or less. Total expansion goal set by Defense Production Administration for this industry, to be achieved by July 1, 1953, is an increase of $33 million of capital investment in added production capacity. About $29 million of this expansion goal has been filled or applications for this expansion are on file. This would leave about $4 million of expansion open.

Small business share of the precision screw machine products expansion goal is set at 60 per cent, with small firms defined as those with 100 employees or less. Total expansion goal set by DPA for this industry, also to be achieved by July 1, 1953, is an increase of $15 million of capital investment in added production capacity. About $12 million of this expansion has been granted, or applications are pending for it. This would leave $3 million of the goal still to be taken up.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

Most businessmen will rate the 82nd Congress "fairly good" in curbing government thrusts on business freedom. But a better Congress wouldn't be the whole answer

THE RECORD of the 82nd Congress just adjourned was fairly good from the businessman's standpoint. Summing up briefly, it:

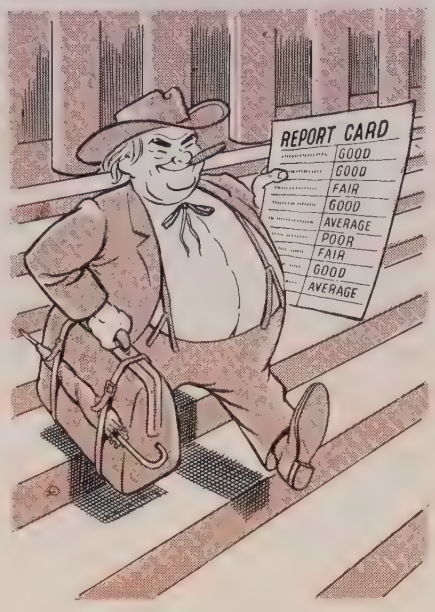
- ▲ Refused Taft-Hartley repeal
- ▲ Denied power to the President to seize industries
- ▲ Rejected the request for federal licensing power as "necessary to enable enforcement of price and materials controls"
- ▲ Turned down the administration's FEPC and "socialized-medicine" proposals
- ▲ Refused to saddle an additional $12 billion on taxpayers
- ▲ Killed new spending proposals including school-aid and college student-aid programs
- ▲ Voted down the $357 million Hell's Canyon Project
- ▲ Cut the appropriation for defense housing
- ▲ Watered down controls under the Defense Production Act

Where It Failed—Congress acted to permit judicial review of wage and other determinations. It should have provided court appeal from all unfair decisions of procurement and other government officers.

But on the whole, it tended toward the "right" side in preventing further encroachments of government on the freedom of business and the individual.

Some Economizing — And the economy talk was not an empty gesture. On the basis of calculations by that stern monitor, the Council of State Chambers of Commerce, federal expenditures in fiscal 1953 should be $4.5 billion below the $85.4 billion recommended by the President. In addition there will be savings of $3.9 billion in fiscal 1954. On the expectation that federal revenue in fiscal 1953 will be $68.3 billion, the council figures fiscal 1953 will show a deficit of $12.7 billion—or about the amount under the President's original and supplemental requests.

Voters will do well to think over this conclusion by the council:



82nd CONGRESS RECORD
. . . fair to middlin'

"It is an impossible task for Congress alone to make large reductions in the federal budget and then make them stick, especially if the Chief Executive is apathetic to the need for economies and even makes a virtue of big spending. If spending is to be brought within reasonable limits, it will take a President and Congress working together to do it."

Labor: Nix on Eisenhower? . . .

Solid opposition by labor union leaders to the candidacy of Eisenhower and Nixon is a foregone conclusion. Instead of acceding to the labor leaders' demand that the Republicans come out for repeal of the Taft-Hartley Act, the platform writers did just the opposite—came out flat-footedly for retention of the act.

Washington observers, coupling this platform declaration with General Eisenhower's recent statement that the Taft-Hartley Act should be used by the administration to settle the steel strike, are sure that labor leaders will not take the challenge lying down. It remains to be seen whether the rank-and-file union worker will feel the same way, for there should be a lot of enlightening debate on the subject between now and November.

Amortization: Forces Muster . . .

Users of machine tools and other industrial equipment dissatisfied with the normal 20-year depreciation rule are looking to 1953 for reform. There is bound to be a tax bill next year, for the excess profits tax is due to expire June 30, 1953.

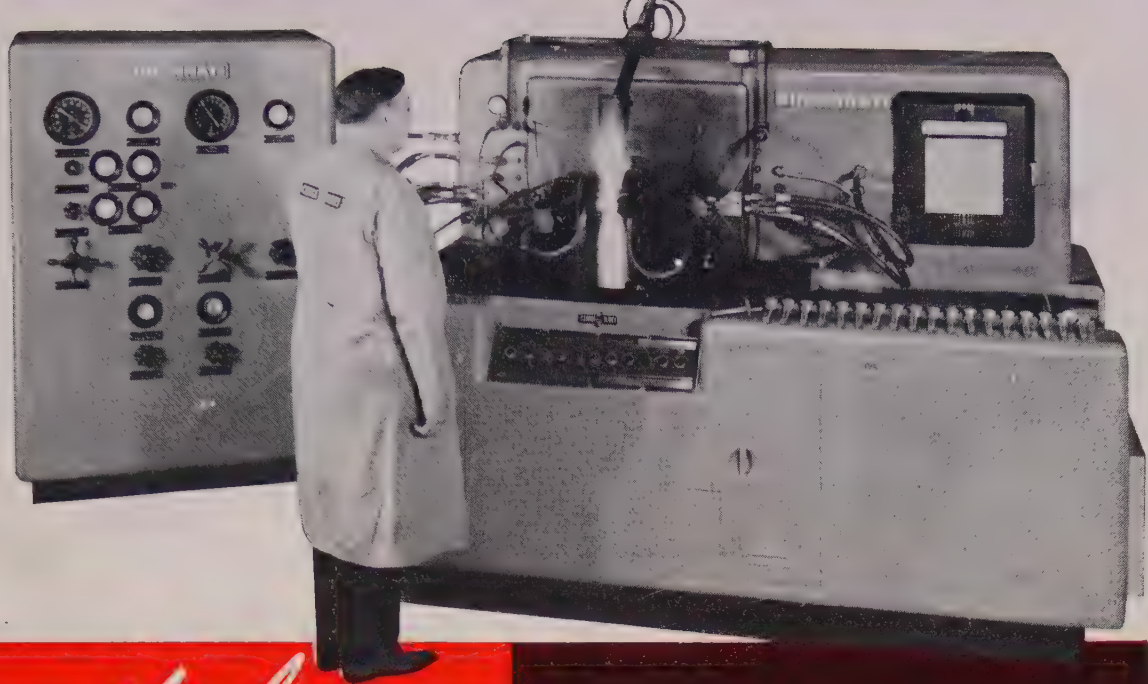
Feeling this should be a good time to drive for fast amortization on a permanent basis, several business organizations are preparing to push the cause. Machinery and Allied Products Institute is preparing a thoroughgoing report on amortization and the Chamber of Commerce of the United States has the problem of amortization as a leading subject on the agenda of several of its important committees.

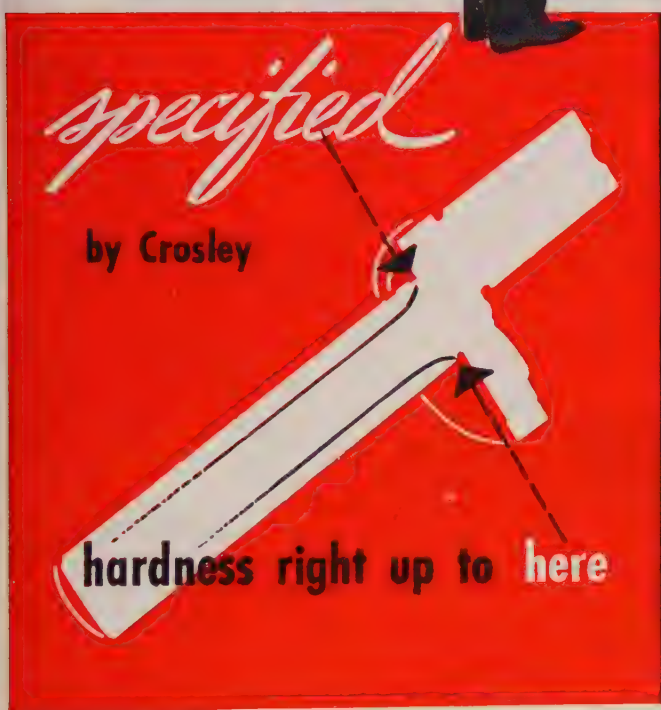
The Senate Small Business Committee will recommend that the Ways and Means Committee give favorable consideration to various fast amortization proposals submitted at its hearings. These call for a universal 5-year, normal write-off period, a flexible provision under which each machine tool user would pick his own depreciation period, a 5-year period for small business, etc. Senator Capehart, (R., Ind.) recently said that he will push this matter in the next Congress.

Security Specs: Unity Soon . . .

Confusion among manufacturers over security regulations is being probed with an eye to unifying Army, Navy and Air Force interpretation of the Defense Department's regulations. The Munitions Board feels the answer lies in the formulation of a single series of regulations for all three services. The new code should be forthcoming within two or three months.

In the meantime, field representatives of the Army, Navy and Air Force are to conduct surveys of contractors' security systems.





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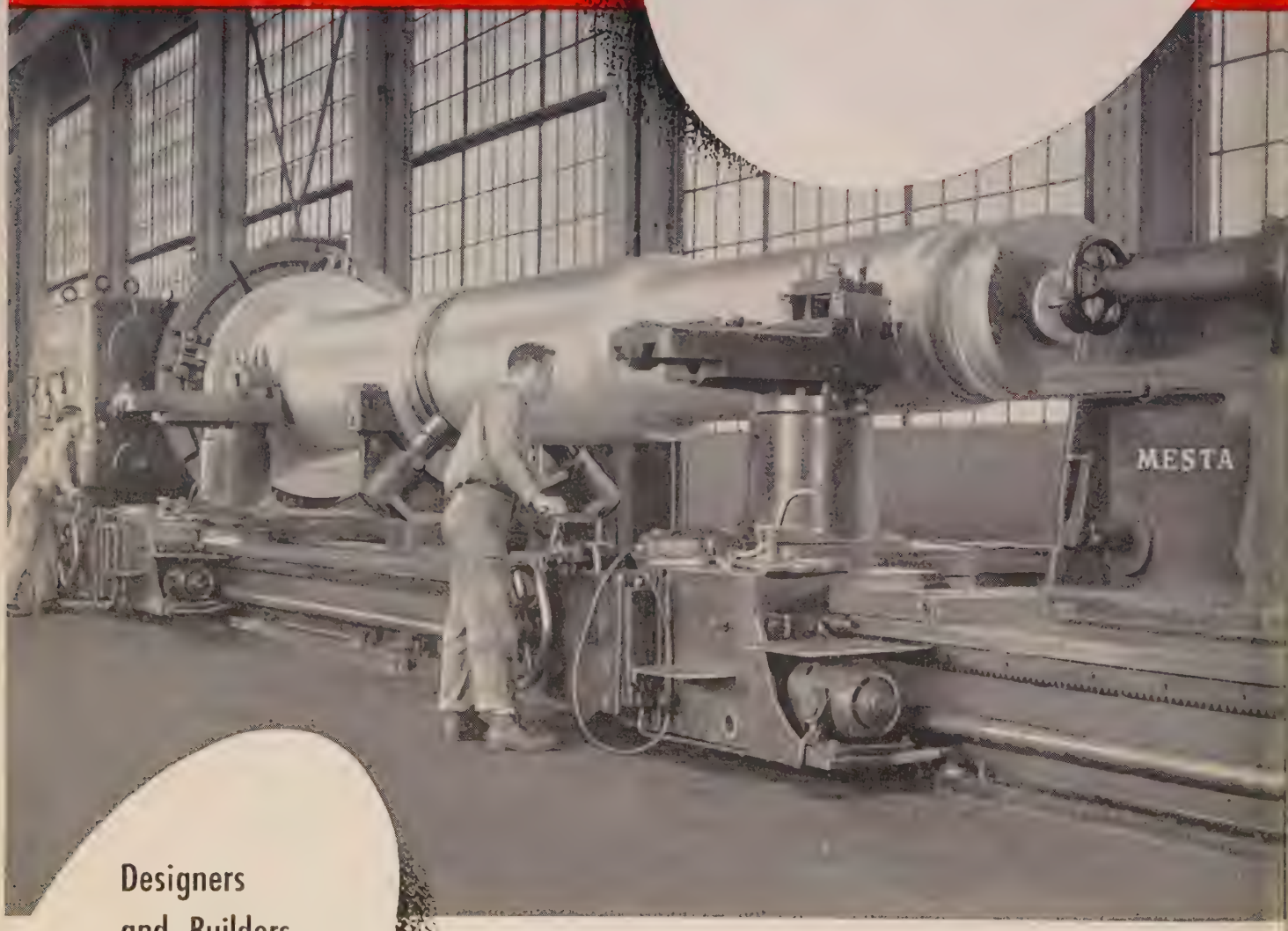
LATHES...

Machining Forged Steel Rotor Shaft on a MESTA Heavy Duty Lathe



Designers and Builders of Complete Steel Plants

MESTA MACHINE COMPANY
Pittsburgh, Pa.

Europe Points Toward Exports

Increased export trade is a "must" for most Western European countries. Here are some of the ways they're attempting to get it

MANY "DOCTORS" OF European economies are currently dishing out the same kind of pills to their patients, the currency-poor, high-cost ridden countries of Europe. The prescription runs something like this:

Rx: Drive costs down and/or grant rebates, tax reductions or materials help to exporting industries.

Rx: Shift export emphasis to products now in demand instead of historically strong exports or those popular before World War II.

Rx: Watch for domestic price-fixing agencies which tend to price a country's goods out of the international market.

Shot in the Arm—An example of the first remedy are the price reductions of 10 per cent on automobiles, 7.5 per cent on trucks and 5 per cent on tractors for export trade announced by Ford Motor Co. Ltd. of Britain. These price reductions in the face of over-all cost increases result from the British government policy of giving more steel to those manufacturers with the best export records.

Britain is also an example of the second prescription. Increasing emphasis is being put on exports of heavy capital goods, which are now in great demand, as contrasted with soft goods, such as textiles.

Double Dose — France, whose prices generally are 20 per cent above those of Germany, 15 per cent above England and 10 per cent above Belgium, is trying for the cure with two pills. One is the anti-inflation drive to reduce prices sponsored by French Premier Antoine Pinay. The other is liberalization of government support of export industries in the form of rebates on taxes and social security levies which figure heavily in French costs of production.

Mr. Pinay's drive for reduced prices has been partially successful at least. Between March 20 and June 20 of this year, the price of French coal has been reduced 4 per cent, metallurgical coke, 4 per cent, phosphorous pig iron, 5 per cent, Hematite pig iron, 8 per cent, wire rods, 4 per cent and tin plate, 5 per cent.

As for remedy number three, a British government commission recently charged that Britain's insulated electric wire and cable industry is a monopoly and recommended that price-fixing arrangements and bidding agreements should be ended. The commission found that two trade associations, Cable Makers Association and Covered Conductors Association, are responsible for about 80 per cent of cable production. The French government is preparing a new law prohibiting price fixing by organized groups. Among the first to be affected will be Comptoir des Produits Siderurgiques Francais, French sales organization for steel products. Organized after the first World War, the Comptoir now fixes prices, books and allocates orders for every steel product made, drawn or rolled by all French steel works.

Symptoms in Germany—Already there are charges of monopolistic abuse being raised against the newly created scrap-liaison office in Germany, organized after iron and steel scrap were freed of price controls. No action is likely against this price-fixing agency, though, as Germany is not anxious to export her scrap. The question is: What will happen when German steel prices are unfrozen? If a similar price-fixing agency develops, it will form a real stumbling block to exports and anti-monopoly action can be expected.

U.S. and India Become Partners

With the signing of the last eleven agreements of the Point Four program in India, the U.S. becomes a partner in the largest rural development program undertaken anywhere in the world. Major object: Increasing India's food supply.

U.S. will supply $50 million and India will contribute $86 million in rupees. About 7000 Indians will be trained, with the help of U.S. technicians, to bring basic improvements in agriculture, health and education. India will import 55,000 long tons of steel under the program, to be used principally for manufacture of agricultural implements.

Authenticated
U.S. TRACTOR PLOUGHS IN INDIA
...modern methods tackle old problem

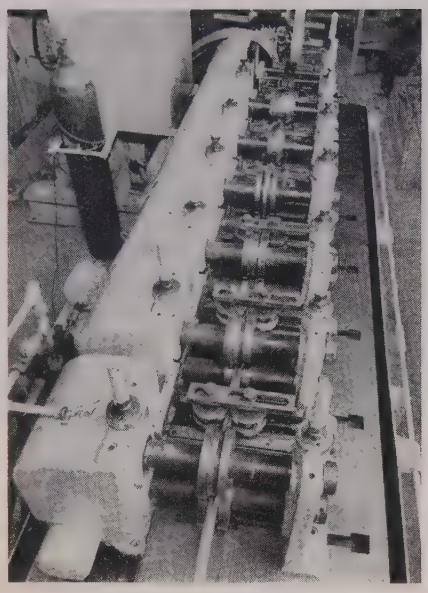
A summary of projects and the U.S. dollar allocations are: Community development, $8,671,000; fertilizer imports, $10,650,000; tubewells for irrigation, $13,700,000; river development, $4,784,000; fisheries, $2,462,000, and others $1,348,000.

Small Firms Get Nod from MSA

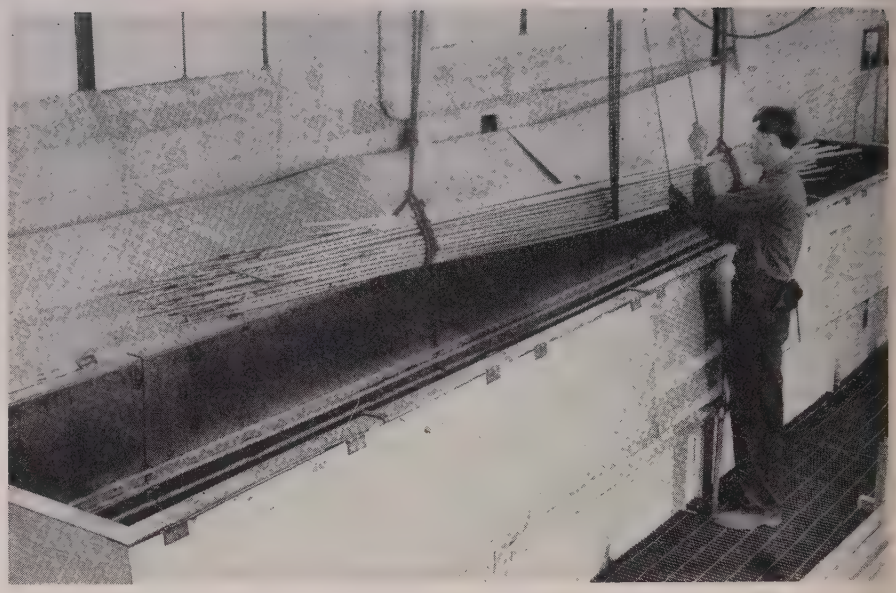
The Mutual Security Agency's Office of Small Business is extending its procurement information facilities to cover Point Four program purchase orders financed by the State Department's Technical Cooperation Administration.

TCA provides technical services and also the financing of some equipment and commodities in 37 foreign countries.

American suppliers can get on the OSB free mailing list by writing for subscription request forms, Office of Small Business, Mutual Security Agency, Washington 25, D. C., or from any Department of Commerce field office.



This forming and welding unit in new plant of Damascus Tube Co. on former Army camp site near Greenville, Pa.,



turns out stainless steel tubing from flat, coiled strip for atomic energy plants and other high-priority customers. Grease acquired during fabrication must be removed completely and this is accomplished on the Detrex vapor degreaser above

Soldiers Move Out, Industry Moves In

Camp Reynolds, World War II replacement depot, becomes home for plants producing stainless and Inconel tubing, specialty transformers, aluminum ladders, diesel engines

FROM Army camp to industrial area—that's the seven-year metamorphosis of a new production district four miles outside Greenville, Pa.

Camp Reynolds, sprawling over 2400 acres of farm land, was a replacement depot during World War II. Thrown up quickly in 1942, it had a capacity to process 40,000 troops. Three years later, the camp was earmarked for deactivation and a return to farm land.

At that point, Greenville Businessmen's Association stepped in. At their doorstep they had a large area well graded and served by its own 25-mile waterline, sewers, roads and eight miles of railroad sidings. It also had large warehouses suitable for storage or manufacturing.

More Industry — Greenville already had plants such as those of Chicago Bridge & Iron Co., Greenville Steel Car Co., R. D. Werner Co. and Hodge Foundry, but to Greenville businessmen the opportunity to bring more people and more industry to Greenville seemed too good to miss.

So, they went to work and by 1947 succeeded in purchasing 56 acres of land, including the warehouses and railroad sidings for $40,500.

Growth—Warehouse space was rented to Westinghouse Electric Corp. and the nonprofit Greenville Businessmen's Association Inc. was in business. Five years later it can list these accomplishments:

Holdings have been expanded to 700 acres. There are eight plants employing more than 1000 people. Two hundred families live in the area.

Ninety-four single houses have been built in an area zoned for residences. Twenty-five more are scheduled for this summer. Nearby Reynolds Village will have 76 new apartment units.

The Reynolds Water Co. and the Reynolds Disposal Co. are operated as subsidiaries and the Pymatuning Independent Telephone Co. has been purchased and rejuvenated with automatic equipment at a cost of $100,000. It ties in with Pennsylvania Bell at Sharon, 12 miles away.

Westinghouse Builds — A new 43,000 square foot plant has been built for Westinghouse at a cost of $325,000 plus a $75,000 office. They house the Specialty Transformer Division employing 500. Westinghouse also rents 253,000 feet of storage space and has an option on 48 acres for future development.

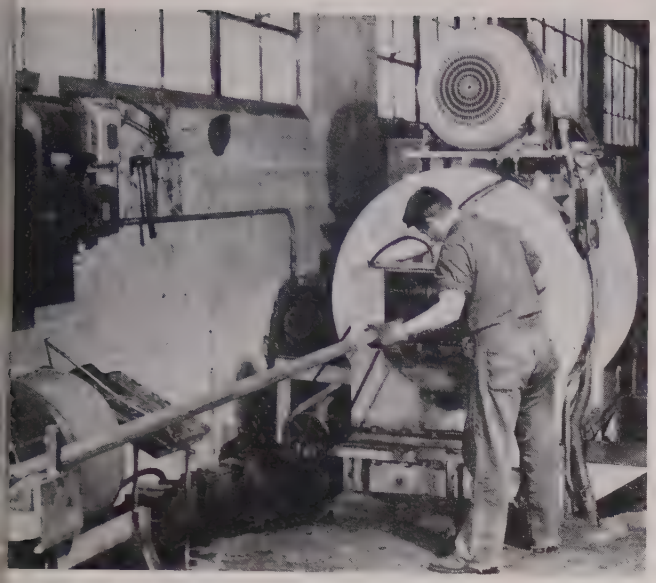
Greenville Tubes Inc., subsidiary of the Edwin L. Weigand Co., Pittsburgh, makes stainless and Inconel tubing up to ½-in. in diameter, mostly for heating elements. It is expanding operations in a rebuilt Army warehouse.

Spenzer Container Corp. makes paper and fiber cans and cores used in the packaging field. It employs around 40, in a modernized assembly building containing 40,000 square feet.

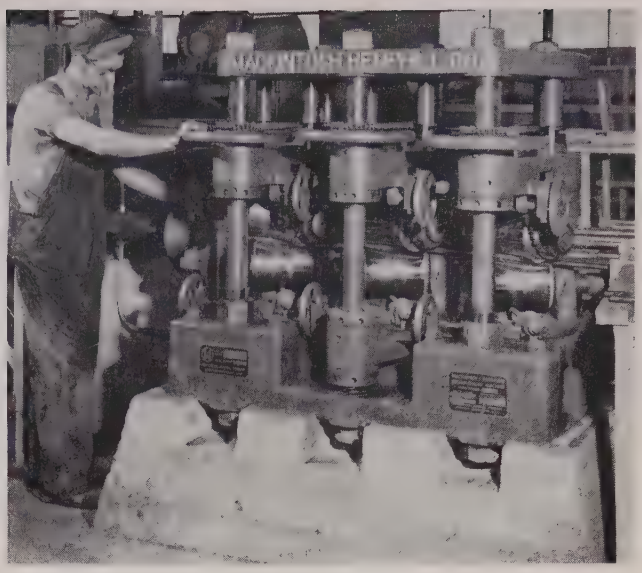
R. D. Werner Co. fabricates aluminum step ladders and extension ladders from extrusions made in its No. 1 plant in Greenville. The No. 2 plant is a former cold storage warehouse.

New Diesel Design—Newcomer to the area is Diesel Power Inc., which has just taken over the Industrial Machine Co., and is already busy machining stainless steel castings and forgings.

Diesel Power will make an air-cooled opposed four-cylinder engine in 50 to 175 horsepower sizes for aircraft, light vehicle and industrial uses. The engine employs a new principle in diesel design wherein a supplementary air cell is



After welding, this Aetna Machine Co. swager is used to hammer out welding bead and produce tube with concentric inside and outside diameter. The Mackintosh-Hemphill equipment at right makes certain tube is perfectly straight. Tube then is ready for further processing such as polishing inside and outside, hydrostatic testing and inspection



placed opposite the fuel injection nozzle. President L. M. Barton expects employment will reach 300 before too long.

Stainless Tubing — Damascus Tube Co. started operations in a former warehouse building March 1, 1950, as Vacuum-Melt Inc. Original basic idea was to make seamless stainless steel tubing by a hot extrusion process. Later it was decided to switch to manufacture of welded tubing from stainless steel strip since the product could meet exacting specifications, such as for heat exchangers in atomic energy plants; for the food, dairy, pharmaceutical and chemical industries and equipment for the process industries. Also, Sharon Steel Corp. is only 12 miles away as a source for strip.

On June 1, Damascus moved into a new plant and added equipment bringing capacity for the production of stainless tubing up to 300,000-350,000 feet per month or 250,000 pounds per month.

Equipment—The plant has three basic Yoder units fitted with Heliarc heads for forming and welding strip into tubing continuously in sizes from ¼ to 3-inch OD. Following welding, a swager or draw bench is used to reduce the welding bead and to produce concentric walls. Other equipment includes a Detrex vapor degreaser, a Mackintosh-Hemphill straightener, a gas-fired annealing furnace and two draw benches. Mattison and Production Machine polishers are being installed to polish both ID and OD.

Finally, prior to shipment, each piece of tubing is completely inspected and tested hydrostatically to a minimum of 1000 psi.

President of the company since December, 1950, is W. B. Klee Jr., formerly associated with the Copperweld Steel Co. Directors include C. W. Holmquist, Copperweld executive vice president; T. S. Long, vice president and general manager of the Taylor-Winfield Corp., Warren, O.; Milton Greenberger, president of the Steel Mill Products Co., Chicago steel distributor; Dr. E. L. Jamison and Dr. J. L. Thomas of Greenville and A. C. Voorhies, Greenville attorney.

WOC—L. J. Kuder, a director and Greenville insurance man also is the guiding spirit of the industrial-residential project of which he is board of trustees chairman.

Mr. Kuder also serves as chairman of the industrial committee with S. F. Moss, president, Greenville Lumber Co., co-chairman.

None of the trustees or chairmen draws either a salary or expenses, but the project is directly in charge of a full-time managing engineer, Robert B. Parker Jr.

Westinghouse Moves Into Navy Plant

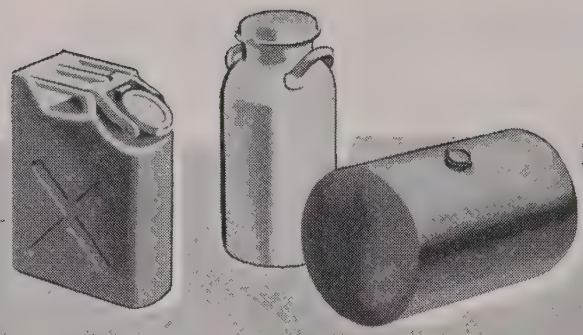
WESTINGHOUSE Electric Corp. is starting a $32 million program to reoccupy the Navy-owned merchant marine plant adjoining the firm's South Philadelphia works.

The project involves extensions to present buildings, purchase of machine tools and construction of a $6 million steam and gas-turbine research and development laboratory on the leased property. At the new facilities, Westinghouse will produce electric utility turbines and gas turbines for power generators, locomotives and turbines to pump gas through pipelines.

The expansion program will add about 2200 workers to the South Philadelphia works, which employs 7800 workers now.

Tax Write-Offs Jump

As June neared its end, tax write-offs for industrial expansion soared upward. For the two weeks ended June 26, certificates of necessity for tax amortization of 651 new or expanded facilities amounting to $769,733,760 were approved by the Defense Production Administration. That's more than double the value of write-offs granted in the preceding two weeks, which totaled $382,925,179.



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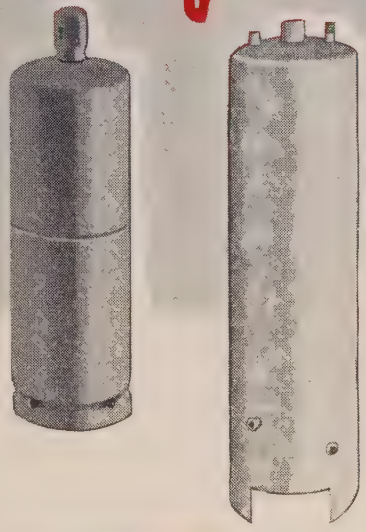

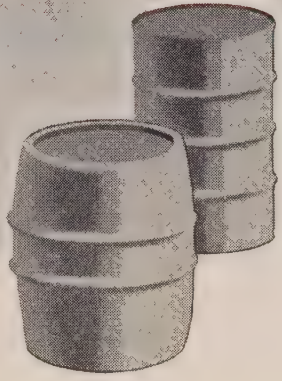

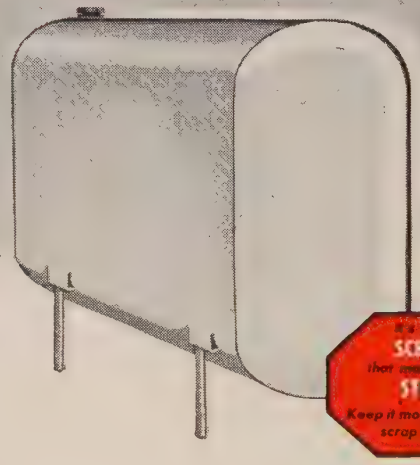

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GREAT LAKES STEEL CORPORATION

N-A-X Alloy Division — Ecorse, Detroit 29, Mich.

NATIONAL STEEL CORPORATION

NATIONAL STEEL

By H. C. TUTTLE *Detroit Editor*

Mirrors of Motordom

Bearing Down on Size

Results of research are seen by examining these two connecting-rod bearings. The little one is in the modern automobile. Its surface is only two square inches. If no progress had been made in the past 25 years, it would take the 30-square-inch area of the larger bearing to handle the same load. Charles L. McCuen, left, general manager of General Motors Research Laboratories, and Arthur F. Underwood, head of GM's bearing research activities, make comparison

No wonder the automakers seethe over effect of the steel strike! After they worked hard to obtain third-quarter allocations they see the steel supply choked off

DETROIT

IT WILL BE September at the earliest before automobile and truck output will come close to the production rate which prevailed before the steel strike started. And chances are good that a weekly rate of 130,000 units from U. S. and Canadian plants will be unobtainable again this year.

It is small wonder that automakers are seething over the long duration of the strike. They worked too hard to get their third-quarter allocations to shut down their operations without directing some curses in the direction of the steel companies and the steelworkers' union.

Which of the sides is right appears to them to be almost completely beside the point. The time was long overdue for the parties (including the government) to worry about something besides their own self-interests.

Bobtailed—The curtailment of automobile production bobtailed the buying season. It shoved into next year some of this year's legitimate demand. It played hob with the competitive situation which virtually all automotive sales chiefs regarded as a healthy climate. It brought back many of the bad practices which gave auto dealers a black eye in the years immediately after the war. The steel strike, in short, has snafued the industry.

And it won't get untangled this year. In Washington the civilian claimant agencies of the National Production Authority and military men are reportedly going at each other hammer and tongs for the split-up in steel when it is obtainable. Some of the realities of the fourth-quarter steel demand-supply situation may be overlooked when the CMP allotments for that period are finally determined because of the influence of "Ira Autoworker." He, through his potent spokesmen, is a force to be reckoned with in Washington. Don't forget that this is an election year and an autoworker who is out of work will not take kindly to the administration's exhortations that it brought him prosperity.

Anyone's Guess — The rumors are flying around this city as to the number of passenger cars which NPA will authorize building in fourth quarter. Ranging from 500,000 to 840,000 units, the exact number as yet is anybody's guess. The 800,000 plus figure is developed by applying the 80 per cent of third-quarter allotments rule which may be adjusted in either direction after the strike's effects are better known.

New cars of some if not all makes will be in short supply through the rest of the year even though total effective demand diminishes because of the pocketbook pinch brought on by the steel strike. Dealers who only a few months ago were pushing their factories for early model introduction now are begging for more cars. Several companies report that their changeover timetable has not been altered but they say so in the face of delayed shipments from jig and fixture makers who are stymied for lack of steel components. Chrysler, which had intended to make its preview showing of new models in September, is now understood to be shooting for October. General Motors, earlier reported to be trying for early fall previews of at least two makes, appears now to be lucky if it can show in January.

Real Obstacle — To those who want to know why the automakers who plan big changes cannot use the present plant close-downs for this purpose, there is the ready answer that the tooling schedule can be moved only one direction—backward. It can't be speeded up

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even if the desire to do so were intense. The same problem, with slightly different details, also confronts the parts suppliers whose leadtime requirements cannot be changed by the present situation's expediencies.

The Horsepower Race Goes On

The industry has no intention yet of bringing to a halt the horsepower race, and the petroleum industry is doing its share to make higher compression engines feasible in the new models. Likelihood that octane numbers would drop was a major reason for Oldsmobile's foregoing the compression boost it had planned for 1952 models, but recent increases in gasoline ratings suggest that the stepped-up engine can be put into buyers' hands without fear of kickback. Compression ratio will probably be in the neighborhood of 8 to 1, compared with 7.5 to 1 presently.

The high compression trend has reached the point where the pressure in the cylinder verges on being enough to squelch the spark in the sparkplug before it can jump the gap and touch off the car-propelling explosion. Answer to this is higher voltage. Twelve-volt systems may be used in some of the 1953 models. With their adoption will come the need for changed design of starter motors, generators, circuit breakers, radios, cigar lighters, signal flashers and electric motor-driven accessories.

Some standardization work on 12-volt system components has been initiated by the Society of Automotive Engineers. Starter motors and generators are not to be tackled with group action yet because they are considered a function of individual car design, but circuit breakers and cigar lighters will be studied for standardization. Work on signal flasher standardization for 12-volt operation may also be undertaken. Battery size and performance specifications may also be written to cover 12-volt design.

Coming: Air Conditioned Cars

Normally an automaker is as closemouthed as a clam about its next year's models. But once in a while comes an exception. General Motors President C. E. Wilson presumably decided that the announcement could be made without jeopardizing demand for this year's cars, and on one of the swelteringly hot days of last week proclaimed that Oldsmobiles and Cadillacs will be available next year with air conditioning units made by Frigidaire Division.

Car air conditioners have long been obtainable by Arabian potentates and Texas oil millionaires, but the new Frigidaire unit will be more a part of the car than such previous devices have been. The sealed refrigeration unit, using Freon gas, will be located in the trunk and is compact enough to reduce the luggage capacity only slightly. A rotary compressor will be mounted on the engine. A single dash-mounted control will permit thermostatic setting to the desired temperature.

Some of the other specifics about the new device are not yet made public—how much it will cost, how much power it takes to run, how cool it can make the car. But in indirect answer to the last of these points, Mr. Wilson notes that the test drivers at GM's Phoenix, Ariz., proving ground practically stampede to get assigned to the air conditioned cars, and the winners say that 110-degree outside temperature gives way to cool comfort inside the cars.

As might have been expected when the new device was announced, some wags are suggesting that openable car windows can now be dispensed with, and some deeper thinkers wonder why the system can't be hooked to the engine cooling system and the radiator eliminated.

Auto, Truck Output

U. S. and Canada

	1952	1951
January	409,406	645,688
February	467,691	658,918
March	517,207	792,550
April	576,505	680,281
May	546,602	695,898
June	541,134*	653,682
July		522,858
August		571,442
September		505,758
October		558,971
November		480,199
December		402,729
Total		7,179,161

Week Ended	1952	1951
June 14	130,544	157,026
June 21	129,574	158,909
June 28	124,337	156,105
July 5	86,036	98,087
July 12	73,742	117,747
July 19	36,000*	128,017

Sources: Automotive Manufacturers Association, Ward's Automotive Reports. *Preliminary.

Job Slips Away from Chrysler

It apparently is Chrysler's fate to be the bystander who accidentally gets poked when the fists are thrown. It was tangled up in the melee when the controversy raged over who was to operate the Detroit Tank Arsenal, and it has been the wary onlooker while the Navy scrapped over the relative merits of various jet engines.

The mammoth plant which Chrysler has been constructing for the Navy on a 306-acre site in Macomb county north of Detroit suddenly is deprived of the purpose for which it was being built —production of Pratt & Whitney J-48 turbo-wasp jet engines. Dodge division had been designated to operate the plant, but Chrysler management has seen the Navy scale down its requirements for this engine almost to the vanishing point, so it was not too surprised when the cancellation came.

The plant, however, is to be completed and Chrysler has been told that it will be used for other Navy projects, but what these may be has not yet been made public if they are in fact determined. The facility, containing close to 2 million square feet, will be one of the few owned by the government.

By cancelling out on the J-48, the Navy, however, does the corporation a service of sorts. It makes available an estimated 200,000 square feet of the new Indianapolis plant which Chrysler had originally intended to use for automatic transmission manufacture but was going to devote to J-48 parts instead. According to plant manager, W. G. Tunis, the civilian work should provide employment for about 5000, almost twice the figure that was scheduled for use on the transmission job when its space was limited.

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Throughout the entire manufacturing process, the quality of "DESEGATIZED" Hi Carbon-Hi Chromium Die steels is constantly controlled. From initial chemical analysis to final inspection of finished product—test after test, after test. That is why the user of these, the very finest die steels, is guaranteed

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Latrobe maintains warehouse stocks of "DESEGATIZED" Hi Carbon-Hi Chromium die steels at these nine strategic locations:

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- Toledo
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- Laboratory research into better steels
- Metallurgical analysis of die failures
- Disc inspection service
- Field service—selection of steels, proper equipment for working and heat treating assistance.

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*If you're interested in construction, write RB&W at Port Chester for a free reprint of the recent article, "No More Riveting."

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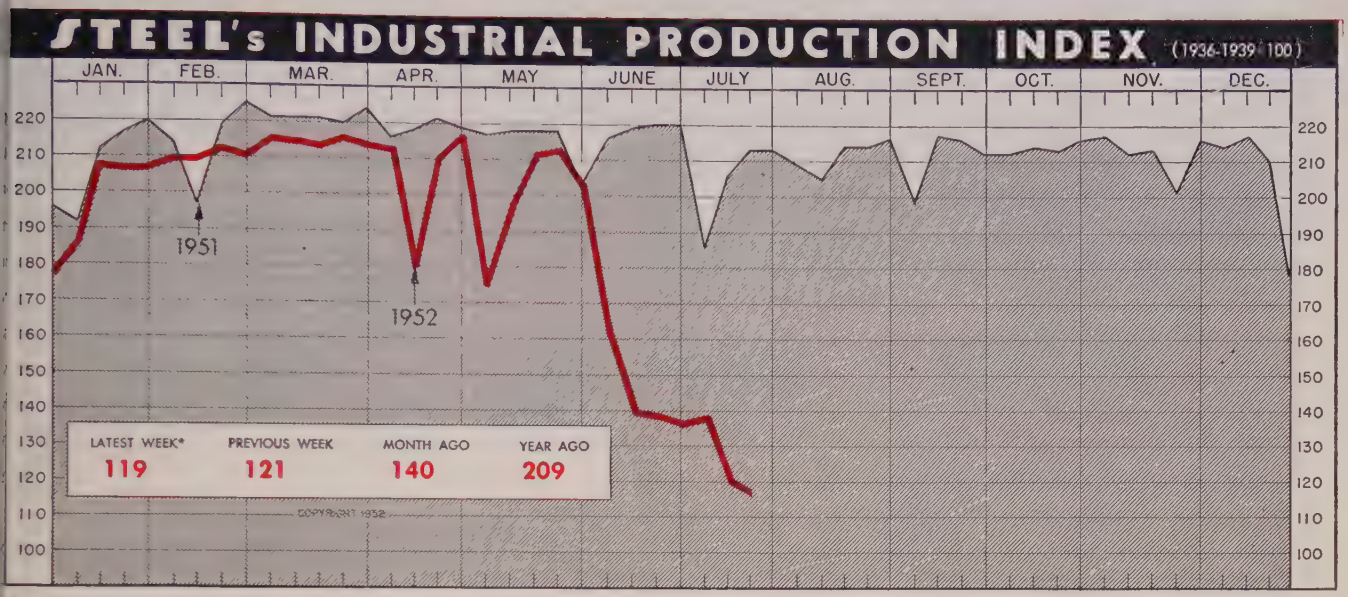


*Week ended July 12

Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 20%.

Effects of the steel strike will brake the uptrend in employment for some time ahead. Industrial activity index takes another plunge as car loadings and auto output fall

DEPRESSIVE effects of the steel strike are certain to be with us long after the steelworkers return to their jobs. Among the strike's results may be a considerable loss of momentum in the trend toward increased employment.

Most metalworking companies had enough steel on hand to maintain full production through June. Unemployment among nonstrikers rose only 200,000 last month, estimates the Labor Department. And this slight increase was due largely to the seasonal influx of students into the labor market. Now the employment scene is darkening.

End of the Rope—Steel users are coming to the end of their inventories and, along with their suppliers and customers, are forced to lay off more workers daily. Unemployment is soaring particularly among the trucking, railroad, automotive and appliance companies. This trend is certain to continue a while after the strike is over, as steel mills take about two weeks to return to full capacity operations.

A decline in steel production in the winter months is virtually guaranteed by the iron ore miners' sympathy strike, which started the day after the steel walkout. For every two days of ore shipments lost now, steel production will be cut about one day when the lake shipping season is ended. If they are unable to obtain enough steel this winter, the nation's metalworking companies again may be forced to trim production and lay off employees.

Another Blow—While steel production made a 2 percentage point gain to 14.5 per cent of former operating capacity, the drop in freight car loadings and car-truck output pushed STEEL's industrial activity index down to 119 per cent of the 1936-1939 average in the week ended July 12. This reading compares with 121 per cent in the previous week and an index of 213 per cent on May 24, the last full workweek before the strike.

Stop Sign for Autos . . .

With inventories of steel vanishing rapidly, the automotive industry is cutting its output to the bone. U. S. plants were able to squeeze a daily average of only 12,870 passenger cars and trucks off their assembly lines in the week ended July 12, says *Ward's Automotive Reports*. A week earlier the daily turnout was 19,990 cars and trucks.

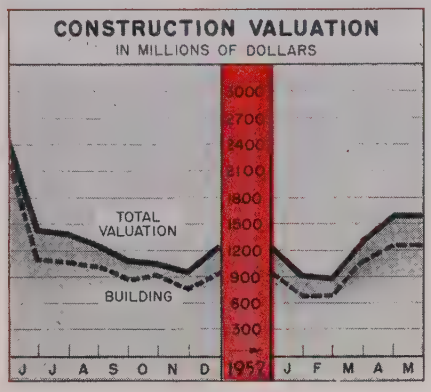
July will be the lowest car-truck production month since postwar-assembly was resumed in 1946. *Ward's* estimates the July turnout at less than 40 per cent of the 395,000 cars and 103,000 trucks assembled in U. S. plants during June.

Steel Output Edges Upward . . .

As some of the smaller steel companies started up operations after signing with their unions, the nation's steel output reached 314,000 net tons steel for ingots and castings in the week ended July 19, estimates the American Iron & Steel Institute. That output compares with 295,000 net tons in the previous week and a month-ago turnout of 252,000 tons. In the week ended June 1—just before the strike—the nation's plants produced 2,091,000 net tons steel for ingots and castings.

Store Sales High . . .

Despite the rise in unemployment brought on by the steel strike, department store sales continue well above the year-ago levels. During the four weeks ended July 5, sales

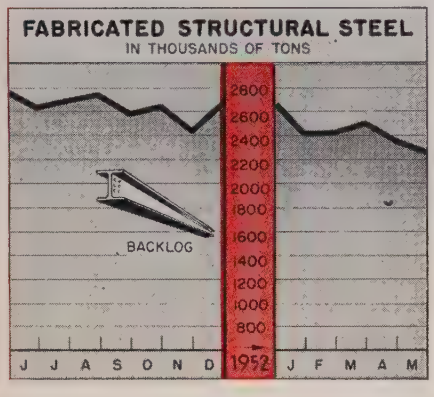


Construction Valuation

(37 States)—In Millions of Dollars

	Total		Building	
	1952	1951	1952	1951
Jan.	902.1	1,043.2	695.4	881.9
Feb.	885.2	1,140.5	697.8	962.3
Mar.	1,321.2	1,267.4	1,056.0	1,043.8
Apr.	1,597.5	1,375.0	1,243.9	1,108.9
May	1,593.6	2,573.0	1,246.2	2,295.0
June	.....	1,408.9	.....	1,098.4
July	.....	1,379.8	.....	1,084.7
Aug.	.....	1,262.8	.....	1,043.5
Sept.	.....	1,082.9	.....	884.2
Oct.	.....	1,051.4	.....	914.4
Nov.	.....	931.8	.....	771.6
Dec.	.....	1,234.3	.....	939.1
Total	.....	15,751.6	.....	13,027.9

F. W. Dodge Corp.

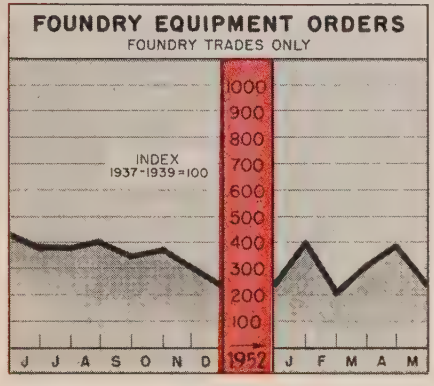


Fabricated Structural Steel

Thousands of Net Tons

	Shipments		Backlogs	
	1952	1951	1952	1951
Jan.	242.7	214.0	2,416	2,404
Feb.	248.4	193.6	2,408	2,590
Mar.	271.1	237.1	2,501	2,602
Apr.	230.7	234.1	2,350	2,808
May	241.7	234.5	2,263	2,771
June	....	257.1	....	2,636
July	....	204.4	....	2,688
Aug.	....	236.9	....	2,748
Sept.	....	228.3	....	2,580
Oct.	....	239.0	....	2,641
Nov.	....	218.2	....	2,438
Dec.	....	202.7	....	2,670
Total	....	2,465.8	....	....

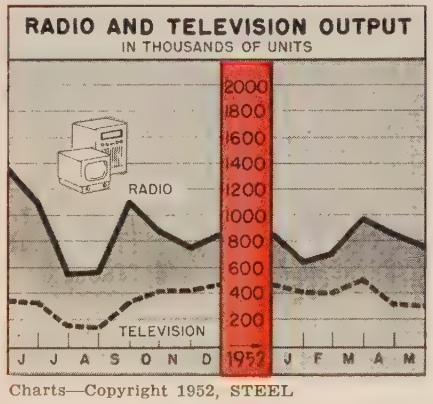
American Institute of Steel Construction



Foundry Equipment Orders

	Index		Value Thousands	
	1952	1951	1952	1951
Jan.	404.5	668.0	$1,862	$3,075
Feb.	200.4	638.6	922	2,940
Mar.	310.0	599.0	1,427	2,758
Apr.	385.1	490.1	1,773	2,256
May	225.2	431.7	1,037	1,987
June	....	393.2	....	1,810
July	....	390.3	....	1,797
Aug.	....	404.5	....	1,862
Sept.	....	346.5	....	1,595
Oct.	....	372.4	....	1,714
Nov.	....	305.5	....	1,406
Dec.	....	230.5	....	1,061

Foundry Equipment Mfrs. Assn.



Radio and Television Output

Thousands of Units

	Radio		Television	
	1952	1951	1952	1951
Jan.	632	1,203	405	646
Feb.	759	1,313	409	679
Mar.	976	1,720	511	875
Apr.	848	1,337	323	469
May	748	1,373	309	339
June	...	1,083	...	327
July	...	548	...	152
Aug.	...	563	...	147
Sept.	...	1,100	...	337
Oct.	...	875	...	412
Nov.	...	748	...	415
Dec.	...	851	...	469
Total	...	12,714	...	5,267

Radio-Television Mfrs. Assn.

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Issue Dates on other FACTS and FIGURES Published by STEEL

Durable Goods ....June 23	Ironers .....July 7	Refrigerators .....June 16
Employ.,Metalwkg. June 23	Machine Tools .....July 14	Steel Castings .....June 2
Employ., Steel ....Apr. 28	Malleable Castings.June 2	Steel Forgings ....June 9
Freight Cars .....July 14	Pumps .....June 30	Steel Shipments ...June 23
Furnaces .....July 7	Prices, Consumer ..July 7	Wages Metalwkg. ..June 23
Gear Sales.....July 14	Prices, Wholesale ..July 7	Vacuum Cleaners ..June 30
Gray Iron Castings.June 2	Ranges, Elec. .....June 16	Washers .....June 30
Indus. Production ..July 14	Ranges, Gas .....June 16	Water Heaters ....June 30

by department stores rose 5 per cent above the similar 1951 period, reports the Federal Reserve Board. Increases in sales were reported in 10 of the 12 Federal Reserve districts.

Biggest jumps in dollar volume were rung up by cash registers in Dallas and Kansas City stores. Merchants' sales were above last year's by 16 per cent in Dallas and 13 per cent in Kansas City. Only the New York and Minneapolis areas reported lower sales volume, compared with the same week, 1951.

As record heat waves moved across the country, the dollar volume of the nation's department stores rose 4 per cent above a year ago in the week ended July 8. Soaring upward with the mercury were sales of summer clothing, air conditioners, and electric fans.

Business Decline Slowed . . .

Deterioration of business conditions slowed down in June, reports the Purchasing Agents Association of Chicago after a member survey.

Of the reporting buyers, 17 per cent said conditions were better, 32 per cent reported conditions as worse, and 51 per cent said their volumes and profits were about the same as a month earlier. This compares with the somewhat more pessimistic attitude shown in May when 10 per cent of the association's members reported better business conditions, 53 per cent said conditions remained unchanged and 37 per cent of the buyers reported a general worsening of conditions from the standpoint of volumes and profit.

Consensus of the buyers surveyed indicates that deliveries in June sped up slightly and that prices paid for goods averaged about the same as in the previous month. Buying policies showed a slight movement in the direction of shorter term purchasing—with 44 per cent of the purchasing agents in June ordering materials 30 to 60 days in advance, 30 per cent ordering less than 30 days ahead and only 6 per cent following a policy of placing orders more than 90 days before the materials were needed in production.

In answer to a special question

concerning July 1 inventories of steel, 11 per cent of the buyers said they had enough steel for 10 days output at the present rate, 39 per cent of the purchasers reported they had a 30-day supply of steel, 15 per cent reported a 45-day inventory and 35 per cent of the purchasing agents said they had enough steel on hand for more than 60 days' output at their companies' present assembly rates.

As to outlook for steel deliveries, 6 per cent of the buyers said they believed they could get them within 10 days, 49 per cent said within 30 days, 21 per cent believed within 45 days and 24 per cent of the surveyed members said they would get deliveries of steel only after 60 days or more.

Refrigerator Output Rises . . .

In preparation for a warm demand in the summer months, manufacturers' sales of household electric refrigerators edged upward slightly in May. Factory sales reached 263,719 units in May, compared with 255,000 in April and 309,722 refrigerators sold during May, last year.

Following the general downtrend in appliance sales, shipments of electric household ranges edged down to 61,209 units in May from the April total of 62,746. In May of last year 106,685 electric ranges were shipped to dealers.

Loadings Drop to 18-year Low . . .

Freight car loadings dropped 31 per cent to the lowest weekly level since 1934 in the week ended July 5, the Association of American Railroads reports. The decline to 447,396 car loadings that week was due mainly to the steel strike, Independence Day, and the coal miners' annual vacation. Loading of revenue freight during the week ended July 5 was 140,763 cars, or 24 per cent, below the corresponding week in 1951, and a decrease of 106,514 cars or, 19 per cent, below the same week in 1950.

Trends Fore and Aft . . .

Awards for private mass housing placed this year are running 50 per cent above the comparable period in 1951 . . . Shipments of aluminum wrought products in May were 9 per cent over the same month last year . . . Labor Department's price index for all commodities other than farm products and foods on July 8 was 1.2 percentage points under the May reading of 113 per cent of the 1947-1949 average . . . Employment in the aircraft industry has increased 130 per cent since Korea.

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	14.5	12.5	101.5
Electric Power Distributed (million kwhr)	6,988	6,478	6,739
Bituminous Coal Output (daily av.—1000 tons)	187	1,445	249
Petroleum Production (daily av.—1000 bbl)	6,100	6,102	6,171
Construction Volume (ENR—millions)	$381.7	$223.2	$361.0
Automobile, Truck Output (Ward's—units)	73,742	86,036	117,747
TRADE			
Freight Car Loadings (unit—1000 cars)	440[1]	447	779
Business Failures (Dun & Bradstreet, number)	156	131	173
Currency in Circulation (millions)[3]	$29,148	$29,180	$27,893
Dept. Store Sales (changes from year ago)[3]	+4%	+1%	−10%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$14,375	$16,065	$21,391
Federal Gross Debt (billions)	$263.0	$262.8	$254.7
Bond Volume, NYSE (millions)	$12.5	$13.2	$12.3
Stocks Sales, NYSE (thousands of shares)	5,099	5,303	5,441
Loans and Investments (billions)[4]	$77.5	$75.4	$70.3
United States Gov't. Obligations Held (billions)[4]	$33.6	$32.5	$30.9
PRICES			
STEEL's Weighted Finished Steel Price Index[5]	171.92	171.92	171.92
STEEL's Nonferrous Metal Price Index[6]	224.6	224.6	226.0
All Commodities[7]	110.7	110.7	115.0
All Commodities Other Than Farm and Foods[7]	111.8	111.9	116.6

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1951, 1,999,035; 1952, 2,077,040. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

On any steel blackening problem

DEPEND on DU-LITE for a Superior Finish

Courtesy The Poly Choke Co.

Du-Lite gave this part with its complicated knurls, slots, threads, etc. a fine rust-resistant durable black finish. It is typical of many other parts, small and large, which have been black oxidized by Du-Lite for many years. Moreover, Du-Lite meets most individual and government specifications including 57-0-2C for Type III Black Oxide finish.

Du-Lite installations are simple, compact, easy to operate. Du-Lite equipment can be tailored to fit production requirements on all types of jobs with a maximum of speed and economy. Du-Lite also makes a complete line of cleaners, strippers, wetting agents, passivating agents, rust preventatives, burnishing compounds etc. for any metal finishing application.

See your nearest Du-Lite Field Engineer or write for more information.

DU-LITE CHEMICAL CORP.
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Rush information on your metal finishing products.

Name.....
Company.....
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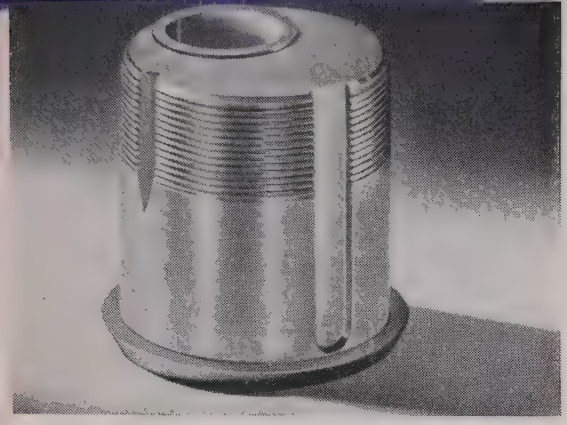
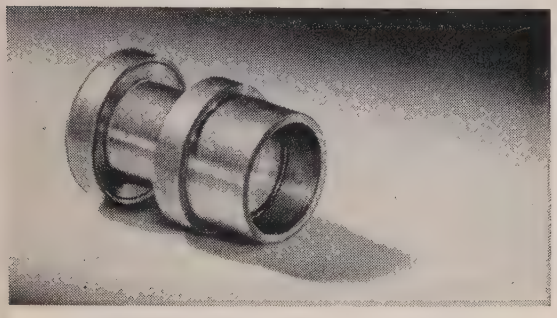
City..... Zone 2..... State.....

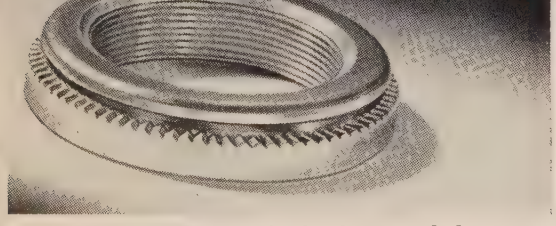
Du-Lite
METAL FINISHING SPECIALISTS



LOCK CYLINDER. Metal: 1⅜″ dia. brass • Machine: model 601 New Britain Gridley • Operations: *cross slide*—rough form, finish form, break down cut off, side mill, vertical end mill, final cut off; *tool slide*—face, drill offset hole, ream and counterbore offset hole, thread • Spindle Speed: 1,324 rpm • Feed: .006″ per revolution • Tools: high-speed steel • Cycle Time: 7.3 seconds



CARPENTER'S PLANE PART. Metal: 9/16″ B1113 steel • Machine: Brown & Sharpe Automatic Screw Machine • Operations: *front cross slide*—form; *rear cross slide*—cut off; *turret*—feed stock, spot drill, drill 13/32″ hole, tap drill, reverse spindle and tap left-hand thread • Spindle Speed: 1,180 rpm • Feed: .0025″ per revolution • Tools: high-speed steel • Cycle Time: 30 seconds



KNOB INSERT. Metal: 1 1/16″ round aluminum • Machine: model 61 1⅝″ New Britain Gridley • Operations: *cross slide*—form, knurl, cut off; *tool slide*—spot drill, tap, ream, recess • Spindle Speed: 1,600 rpm • Feed: .005″ per revolution • Tools: high-speed steel • Cycle Time: 7 seconds

SUN OIL COMPANY, Dept. S-7.
Philadelphia 3, Pa.

I am having trouble possibly caused by an inadequate cutting oil. I would like ☐ the services of a Sun representative; ☐ the booklet "Cutting and Grinding Facts."

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Title _____

Company _____

Street _____

City _____ Zone _____ State _____

MORE THAN 300 PARTS ARE MACHINED with the aid of *one* cutting oil for tools and hardware items made by Sargent & Co. Raw materials worked are: B1113 steel, 11ST-3 aluminum, ASTM-B140-46 Type B half-hard bronze, B16-46 brass, and Type 416 stainless steel. Stock ranges from 1/16″ wire to 2″ bars.

SINGLE GRADE OF SUNICUT REPLACES 4 CUTTING OILS!

A good example of cutting-oil economy and efficiency is provided by Sargent & Co., well-known hardware and tool manufacturers. Their complete line requires the machining of more than 300 parts from a wide range of metals. A few years ago this company was using four different cutting oils, purchased in drums. By switching to a single product, Sunicut 11W, and buying it in bulk, Sargent has been able to effect an annual saving of about $3,000. All operations are performed as well as before, or better—and shop efficiency is up.

Sunicut 11W is a low-viscosity, dual-purpose cutting oil for automatics machining all nonferrous metals and free-machining steels such as B1112 or B1113. Its transparency permits quick and accurate miking. It will not stain brass or copper under normal conditions. It drains rapidly, minimizing carry-off. And its high lubricating and cooling properties aid in prolonging tool life and improving finishes. Moreover, it protects finished parts from rust and corrosion.

Other Sun cutting oils offer similar opportunities for improved operations and economy. For information about them, or the help of a Sun representative, use the coupon at the right.

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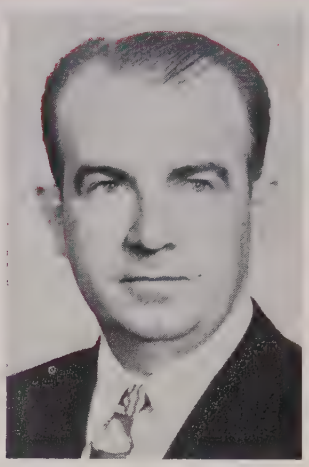
Men of Industry

C. J. PLISKY
. . . *Pressed Steel V. P.-production*

JOSEPH V. KIELB
. . . *Tenney Eng. production mgr.*



CHARLES R. CROWDER
. . . *exec. V. P., Van Norman Co.*

C. J. Plisky was appointed vice president in charge of production, **Pressed Steel Car Co. Inc.**, Pittsburgh. He was vice president in charge of the Unicel and Jahn Trailer Divisions. **L. W. April** was made general manager, Solar-Sturges Mfg. Division; **H. A. Johns** as general manager, Erie Mfg. Division; and **P. A. Larnino** as general manager, Unicel and Jahn Trailer Division.

R. H. Morse III was appointed general manager of the Beloit, Wis., Works of **Fairbanks, Morse & Co.** He succeeds **Orrin S. Leslie**, named manager of manufacturing in Chicago.

Howard B. Steggall, a vice president, **United States Radiator Corp.**, Detroit, was appointed senior vice president. He has direct responsibility for sales, manufacturing and engineering, advertising and industrial relations for the U. S., Pacific, Cyclotherm and Metal Products Divisions.

George H. Sanborn, Detroit district manager and chief field engineer, was named sales manager, **Fellows Gear Shaper Co.**, Springfield, Vt., to succeed **Leroy C. King**.

Sawhill Mfg. Co., Sharon, Pa., appointed **D. M. Middleton** and **F. D. Hamlin** district sales managers. Mr. Middleton will cover western and southern Ohio, southern Indiana and Kentucky. Mr. Hamlin's territory includes eastern and northern Ohio, western Pennsylvania, West Virginia and Virginia.

Tenney Engineering Inc., Newark, N. J., appointed **Joseph V. Kielb** as production manager of both its Newark plants, which produce chambers for testing products under variable environmental conditions.

A. E. Giblin was appointed works manager of Colorado Fuel & Iron Corp.'s **Wickwire-Spencer Steel Division**, Buffalo. He advanced to assistant plant manager of the Buffalo steel mills in 1949 and becomes work manager following resignation of **Carl J. Murray**.

General Controls Co., Los Angeles, named **Fred Weldon** sales manager; **William L. Kell** manager, heating controls division; **R. D. Grayson** manager, appliance controls division; and **Rudy Roedder** western refrigeration controls division manager.

Crane Packing Co., Chicago, elected **Frank E. Payne** chairman of the board and **Karl V. Rohlen** president, following retirement of **A. W. Payne** as chairman.

Vesuvius Crucible Co. appointed **Alexander C. Hauck** sales representative in the central territory with headquarters in Cleveland.

Ray A. Mentel, recently with Perfection Stove Co., is now vice president and general manager, **Republic Hardfacing Corp.**, Bedford, O. **Gorham W. Woods** joined Republic as engineer in charge of its new Industrial Hardfacing Division.

Charles R. Crowder becomes executive vice president, **Van Norman Co.**, Springfield, Mass. He started with Van Norman 24 years ago as a salesman and became successively sales promotion manager, sales manager and vice president and director of sales, automotive division. His new post places him in charge of all manufacturing activities.

Edward A. Hassan Jr. assumes a new position with **Kaiser Aluminum & Chemical Corp.** as manager of its raw materials department with headquarters in Oakland, Calif. He succeeds the late **M. B. Lovelace.**

Electro-Refractories & Abrasives Corp., Buffalo, appointed **George B. Michie** vice president of trade relations, **R. Clyde Wolfgong** general sales manager, and **Walter H. Archbold** engineer in charge of its new Vitrified Grinding Wheel Division, for which a plant is being constructed in Lackawanna, N. Y.

C. J. Berini was named division manager, Wayne Division, **Gar Wood Industries Inc.**, Wayne, Mich. **H. D. Chicoine** becomes assistant division manager.

Oliver Corp. appointed **R. L. Lee** assistant general sales manager in charge of territories served by the Dallas, Harrisburg, Pa., Memphis, Tenn., and Richmond, Va. branches. **C. R. Hunt** becomes assistant general sales manager in charge of operations of 11 branches in the area extending

from Mr. Lee's territory in the East and South to the West Coast. **A. W. Thompson** has charge of sales operations in states bordering the Pacific, including Canadian branches.

J. O. Tompkins was made assistant chief metallurgist, **Keystone Steel & Wire Co.**, Peoria, Ill., responsible for maintenance and improvement of quality of steel and wire products. **Harold Fales** becomes wire mill metallurgist, in charge of quality control of wire and wire products.

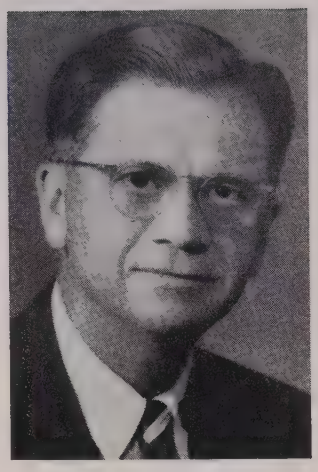
John R. Walker was appointed assistant manager, bar and semifinished materials sales section, **United States Steel Co.**, Pittsburgh. He has been assistant to the manager since 1949.

General American Transportation Corp., Chicago, appointed **LeRoy Kramer Jr.** assistant vice president of its **General American-Evans Co. Division.**

George McCuskey joined **Youngstown Sheet & Tube Co.**, Youngstown, as assistant to the president, his duties to be primarily concerned with financial phases of the company. In the Chicago office **Rodney V. Nilsson** was made manager, tin plate sales, and **R. Paul Broadhurst** assistant district sales manager for that territory. **D. W. Martin** was made Atlantic district sales manager.

Richard H. Clay is manager of engineering service department, **A. M. Byers Co.**, Pittsburgh. He has been with Byers for the last two years and previously was with Ingalls Iron Works.

RICHARD H. CLAY
. . . new appointment, A. M. Byers



J. B. O'CONNOR
V. P.-gen. mgr., new product development, Illinois Tool Wks., Chicago. Noted in STEEL, June 16, p. 92

Appointment of **James W. Hendry** as director of plastics research and **Boyd W. Bullock** as manager, plastics division, was announced by **Jackson & Church Co.**, Saginaw, Mich. Mr. Bullock also is assistant to the president.

Thomas H. Risk, formerly research engineer for Ethyl Corp., was elected a vice president of **R. M. Hollingshead Corp.**, Camden, N. J. He will work on matters relating to new product developments.

Karl C. Ruppenthal joined Pittsburgh Coke & Chemical Co., Pittsburgh, as technical supervisor of its newly formed fine chemicals division.

John F. McDaniel, formerly manager of marketing, was named vice president and manager, marketing, **Hotpoint Co.**, Chicago. **Harold A. Strickland**, formerly manager of engineering, becomes vice president and manager, engineering.

Wynn T. Sullivan was appointed advertising manager, **Heyl & Patterson Inc.**, Pittsburgh. Before joining the Pittsburgh company he was associated with Penton Publishing Co., engaged in market research and promotion activities for STEEL.

Harry Maude was named purchasing agent for the central region of **Canadian National Railway** with headquarters in Toronto, Ont. He succeeds **J. W. Corbett**, retired.

E. W. Clark, assistant to the general sales manager, **E. C. Atkins & Co.**, retired after 66 years of service with the Indianapolis saw manufacturer.

Ras Rowley, formerly in charge of Louisiana sales for **Southern States Steel Corp.**, was named manager of the Beaumont, Tex., plant succeeding **William Hoppe.**

Indiana Steel Products Co., Valparaiso, Ind., announces creation of four new offices in a company expansion program. **Charles Maynard**, director of engineering and research, and **John Bouwmeester**, manufacturing manager, were appointed vice presidents; **A. Richard Kirsch**, controller, was named treasurer; and **Anthony Astrologes**, assistant secretary, was appointed assistant treasurer and assistant controller.

Howard W. Noleen was appointed San Francisco district manager, **E. F. Hauserman Co.**, to succeed **William Hauserman**, recently transferred to the Los Angeles office.

Richard T. Johnstone was appointed chief draftsman, **Snyder Tool & Engineering Co.**, Detroit. He will supervise the company's entire engineering department.

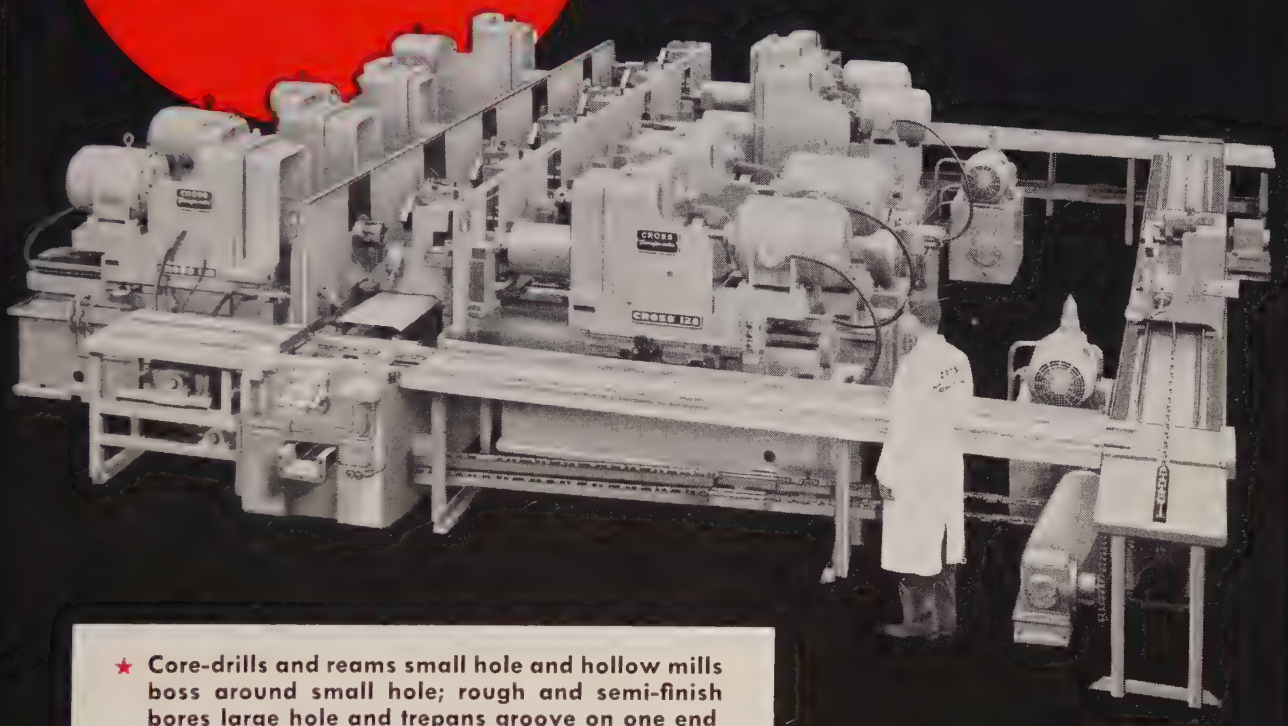
L. D. Webster, former public relations director for **Lone Star Steel Co.**, Dallas, was elected vice president, employee and public relations.

C. Wesley Merritt was named sales manager of the newly organized railroad department, **National Electric Products Corp.**, Pittsburgh. Associated with the company since 1940, his most recent

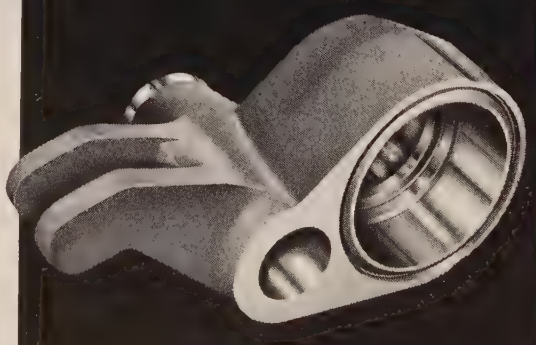
C. WESLEY MERRITT
. . . a sales mgr. at National Electric

Bores, Hollow Mills and Trepans Tank Idler Arms

Another Transfer-matic by Cross



- ★ Core-drills and reams small hole and hollow mills boss around small hole; rough and semi-finish bores large hole and trepans groove on one end.
- ★ Cast Armor material—Rockwell C-36.
- ★ Six and one-half pieces per hour at 100% efficiency.
- ★ Six stations—one for loading, five for machining—with automatic transfer from station to station.
- ★ Palletized work holding fixtures hold part securely for all operations with integral conveyor returning fixtures from last station to loading station.
- ★ J.I.C. standard electrical and hydraulic construction with stranded wire.
- ★ Pre-set tools and Cross Cutter-Drive reduces downtime.



Established 1898

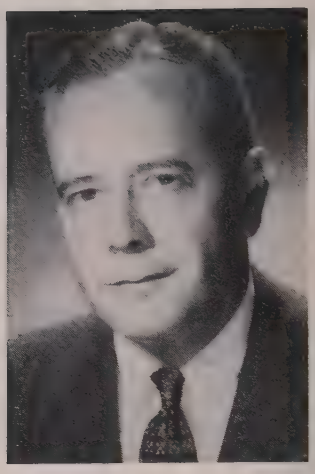
THE **CROSS** CO.

DETROIT 7, MICHIGAN

Special MACHINE TOOLS

PAUL E. WOLFE
. . . Heli-Coil applications engineer

HERBERT SCHWARTZ
. . . Daco production mgr.



FRANK B. McKOWN
. . . Kennecott Sales V. P.

responsibility was as engineer of wire and cable.

Heli-Coil Corp., Danbury, Conn., appointed **Paul E. Wolfe** as applications engineer. He was associated for six years with Ford, Bacon & Davis Inc. and also served as independent engineering counsel to many companies in a wide variety of industrial fields.

Roger M. Carroll was appointed chief engineer, **Welin Davit & Boat Division**, Continental Copper & Steel Industries Inc., Perth Amboy, N. J.

David A. Hillstrom, president, **Corry-Jamestown Mfg. Co.**, Corry, Pa., assumes in addition the new position of chairman of the board.

Robert E. Sibley retired after 45 years as sales and advertising manager, **Leiman Bros. Inc.**, Newark, N. J.

Hill-Chase Steel Co. of Maryland, Baltimore, appointed **E. C. Sanders** sales representative in Roanoke, Va.

Daco Machine & Tool Co., Brooklyn, N. Y., appointed **Herbert Schwartz** production manager. He formerly was assistant to the general manager.

Pittsburgh International Trading Co., New York, export and import affiliate of Dumas Steel Corp., appointed **Thomas M. Desmond** as manager of its metals department. He recently resigned as chief of the nonferrous and tin plate section of OIT, Department of Commerce.

Thomas J. Menzel was appointed plating chemist, **Hanson - Van Winkle-Munning Co.**, Matawan, N. J. He was analytical chemist.

E. L. Black was appointed acting manager, manufacturing division, **Pacific Airmotive Corp.**, Burbank, Calif., following resignation of **Richard D. Maystead**, former vice president.

Stanley C. Johnson was named to succeed **Harry O. Anderson**, retired, as chief abrasive inspector for **Norton Co.**, Worcester, Mass.

Frank B. McKown was appointed vice president and **Charles N. Whitaker** assistant sales manager of **Kennecott Sales Corp.**, New York, sales agency for Kennecott Copper Corp.

A. W. Winchester is now sales representative in Michigan for **Universal Sheet & Strip Steel Co.**, Chicago.

Westinghouse Electric Corp., Pittsburgh, appointed **Nelson H. Stewart** staff assistant to the sales manager, electronic tube division, **S. C. Leyland** manager of engineering, meter division, and **W. K. Sonneman** manager of the meter division's relay engineering section.

O. D. Metz, Emerson Electric Mfg. Co., St. Louis, assumes the duties of manager of motor sales to succeed **William R. Fraser**, retired. **W. H. Thias** becomes assistant manager, motor sales, and **Howard Sample** as manager, eastern district, with headquarters in New York. **R. G. Bardon** was named assistant manager, merchandise sales.

OBITUARIES...

Arnold Lenz, 64, vice president of **General Motors Corp.**, Detroit, and general manager, Pontiac Motor Division, was killed in an automobile-train collision July 13 near Lapeer, Mich.

Joseph A. Voelker, 62, vice president and general manager of sales, **Pittsburgh Steel Co.**, Pittsburgh, died of a heart attack July 12.

J. Gordon Fogo, 55, vice president, **Algoma Steel Corp. Ltd.**, Sault Ste. Marie, Ont., died July 6 at Murray Bay, Que., while attending business meetings.

Ingwald M. Larson, 68, secretary, **Claud S. Gordon Co.**, Chicago, died July 9 while on vacation.

Emil H. Maeder, 64, manager, **Weil-McLain Co.**, Erie, Pa., died July 7 of a heart attack.

R. C. Brower, 60 secretary-treasurer and director, **Timken Roller Bearing Co.**, Canton, O., died at his summer home July 13.

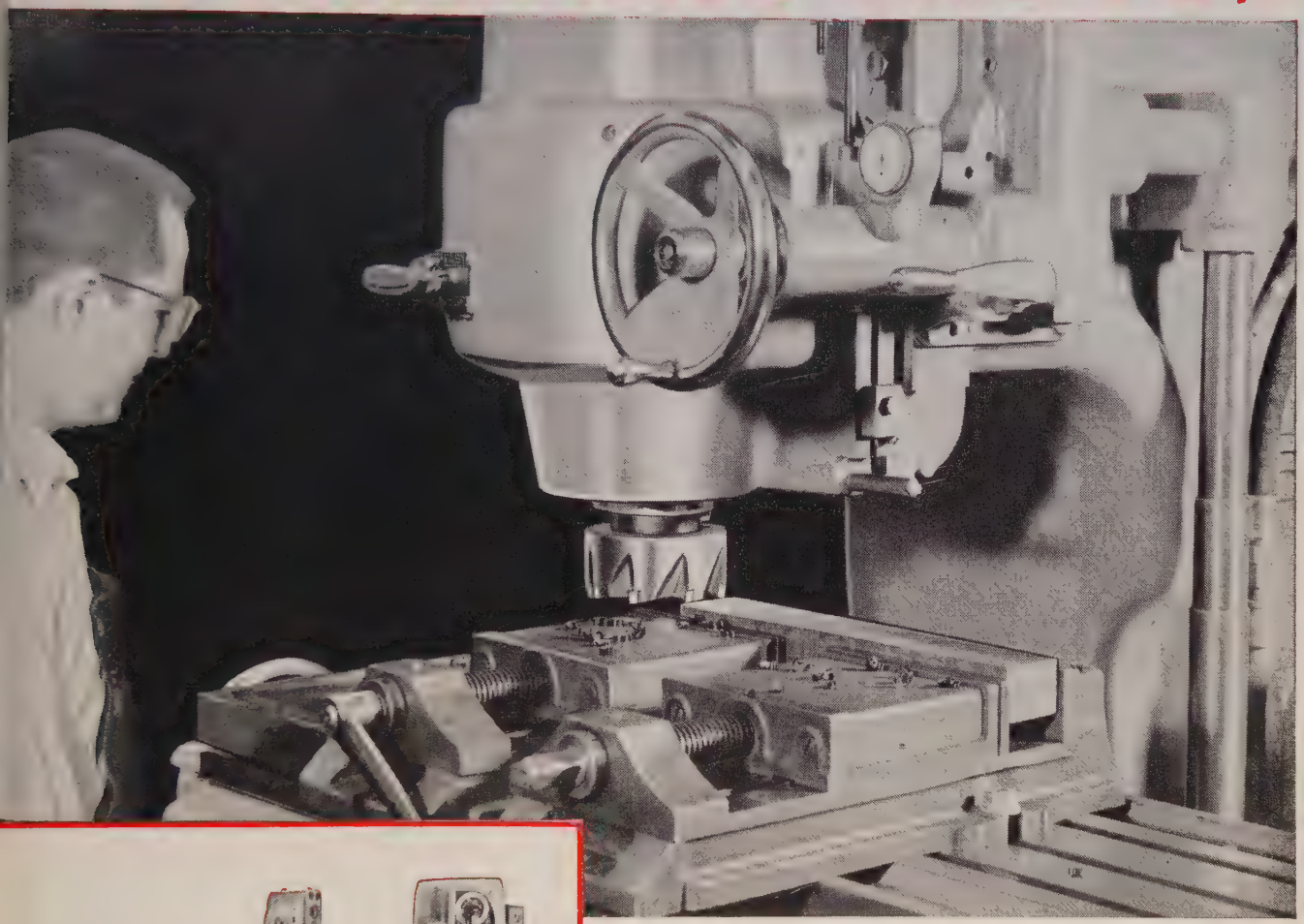
Allen K. Moulton, 68, president, **Ohio Carbon Co.**, Cleveland, died July 12. He founded the company in 1916.

Thomas A. Igoe, 91, president, **Igoe Bros. Inc.**, Newark, N. J., from 1917 until retirement in 1950, died July 9.

Frank Hesse, 57, vice president and treasurer, **National Steel Corp.**, Pittsburgh, died July 10.

FACTS TELL THE STORY...

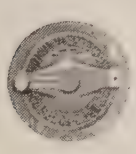
NEW KEARNEY & TRECKER MILWAUKEE CK MILLING MACHINE CUTS PRODUCTION TIME 75%



C-K MILLING MACHINE FEATURES THAT HELP DO THIS JOB BETTER

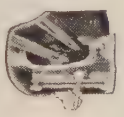
New CK column easily absorbed vibration from heavy cutting load.

Greater horsepower permitted maximum results from modern cutter.

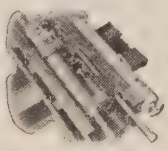


24 different spindle speeds (13 to 1300 rpm) plus 32 different table feeds (3/8" to 90" ipm) meant operator selected proper combination to take full advantage of high horsepower and modern tools.

CK's 3-bearing spindle and flywheel assured fast metal removal, excellent finish.



CK's large (2" dia.) table feed screw gives greater bearing contact for smoother feed.



CK's positive, metered lubrication assures trouble-free operation.

The FACTS on this job are:

Operation: Face mill four sides
Workpiece: Ram for slotting attachment
Material: S.A.E. 4615 forging — 2¼" x 2¾" x 18½"
Machine: New 25hp No. 4 CK vertical
Cutter: 6" dia., 8 Tooth Carbide Face Mill with 7° negative primary rake angle.
Cutter Speed: 275 rpm **Depth of Cut:** ¼"
Table Feed: 25 ipm **Machining Time:** 3.8 minutes
Total Saving in actual machining time: 11.9 minutes or 75.8%

NOTE: Part machined is the operating ram used in a slotting attachment. It must be tough and accurate. It is milled to a semifinish state and finish ground to final accuracy.

It will pay you to see the new CK line of milling machines — check them against your own requirements. You'll notice how every feature is designed and job-proven to give you cost-cutting results — greater machine capacity, productivity and better finished products. So, for the full story, contact your nearest Kearney & Trecker representative or write: Kearney & Trecker Corp., 6784 W. National Avenue, Milwaukee 14, Wisconsin.

KEARNEY & TRECKER MILWAUKEE MACHINE TOOLS

THE ROAD TO GOOD BROACH TOOLING

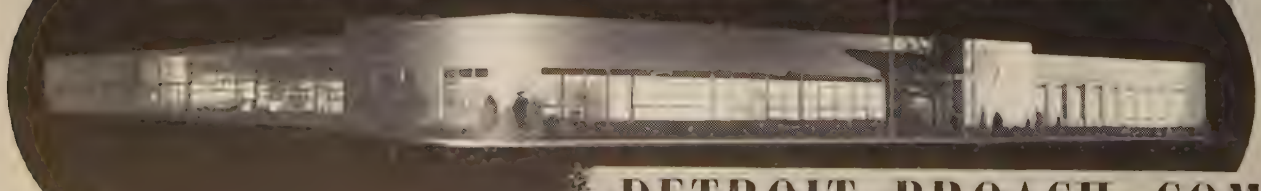
Paved by Defense Production . . . Profitable for Civilian

The demands of defense production during the second world war, as well as those imposed in the present emergency, have fostered great advancements in broach tooling. Now accomplished, these advancements are literally the signposts of broach tooling design for current defense production. Applied to civilian production they open the door to a whole new world of cost-cutting possibilities . . . parts can be processed with fewer operations, broach tooling lasts longer, minute dimensional limits can be held with ease and economical broaching production can be had without long-run production quantities.

As substantial contributors to these advancements, Detroit Broach engineers can be relied upon to incorporate the latest and finest of procedures into the design of your tooling. It will pay you to keep this in mind when considering broach tooling for *your* production.

Proper chip removal
Prolonged tool life
Precise form cutting
High surface finishes
High production rates
Easier loading of parts
Universality of fixtures
Automatic machine cycling
Better operator visibility
Extremely close tolerances
Consistently superior workmanship
Economy in high AND low production

WORLD'S LARGEST MANUFACTURER OF BROACHES AND BROACHING TOOLS EXCLUSIVELY



DETROIT BROACH COMPANY

20201 SHERWOOD AVE. • DETROIT 34, MICH.

Production AND Engineering NEWS AT A GLANCE

ALUMINIZED STEEL FUTURE: BRIGHT—Last year only 1000 tons of aluminum were used for hot dip aluminized steel. But by 1960, says James B. Russell, research metallurgist for Kaiser Aluminum & Chemical Corp., the figure should be close to 80,000 tons annually. He states that the aluminizing industry is growing, but will have to work hard to compete with galvanizing, and possibly, tin plate. The economics of the process of hot dip aluminizing is closely allied with the care exercised in applying the coating, he points out.

PUMPS LIQUID METALS—A new electromagnetic pump with no moving parts pumps liquid metals and other low resistance conducting fluids at temperatures up to 1000° F. According to General Electric engineers, the development can be used to move any conducting fluid that has a specific resistance equal to or less than stainless steel. Liquid metals such as sodium, sodium-potassium alloys and lithium, they say, fit this classification. Pump operates on the principle that a current-carrying conductor in a magnetic field is acted on by a force. In this case, the fluid serves as the conductor so when current and flux are properly applied, pumping occurs.

ONE OPERATION JOB—Manufacturing jet engine components presents some tough problems all around, in materials and processing. One of the knottiest—that of machining the "Christmas Tree" form on the holding end of the turbine bucket—was unraveled recently by a special grinder developed by Jones & Lamson. The machine does the job to the required tolerances automatically. The operator just loads the machine and presses the cycle button. p. 88

STICKING QUALITIES DOES IT—Low pH nickel strike which proved itself so valuable as an alternate for a cyanide copper strike on steel, prior to bright nickel plating, is proving equally valuable in getting satisfactory adhesion of bright nickel to unbuffed bright acid copper. Frederic B. Stevens Inc. says many in the plating field gave up the practice of applying bright nickel direct on bright acid copper because satisfactory adhesion could not be obtained consistently. The low pH nickel strike solves the problem so completely that a growing use of this application is anticipated.

SHAVES SHIPPING COSTS—Are you looking for ways to pare shipping costs? Here's how one large midwestern concern shaves some of its costs and improves efficiency of its shipping operations immeasurably. The company produces shipping labels at the same time the original order is written. This eliminates the possibility of errors in the later transfer of shipping details to the shipping room for preparation of stencils or labels.

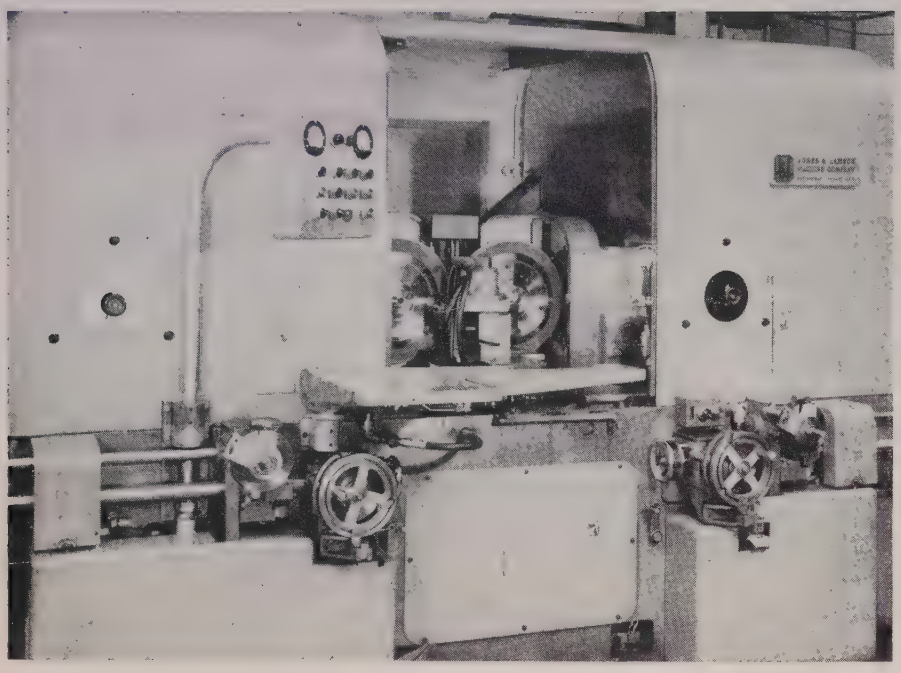
THE PAY-OFF IS BIG—Advantages of resistance welding too frequently are by-passed because at first glance some products do not seem to lend themselves to the process. But the material gains being made by many users who stopped to take a second look can't be shrugged off. This is especially true today in view of steadily mounting fabricating costs. Actually many products currently fabricated by other means can be adapted to the process. What is needed is just a little design ingenuity after a good second look. A refrigerator maker who did that made a big gain. His pay off was a production gain of about 260 per cent. p. 91

WATCH THE BLOCKERS—There is more than meets the eye in the part played by dies in press forging. G. D. Welty, products manager of Alcoa's forging division, says that where close tolerances are specified, the true brains of die design lie in the design of the blockers. The finish die must be made like the customer's drawing, but the blockers must produce a part that has material in exactly the right location before it goes into the finish die. Some designs may require the use of three or even four sets of blockers.

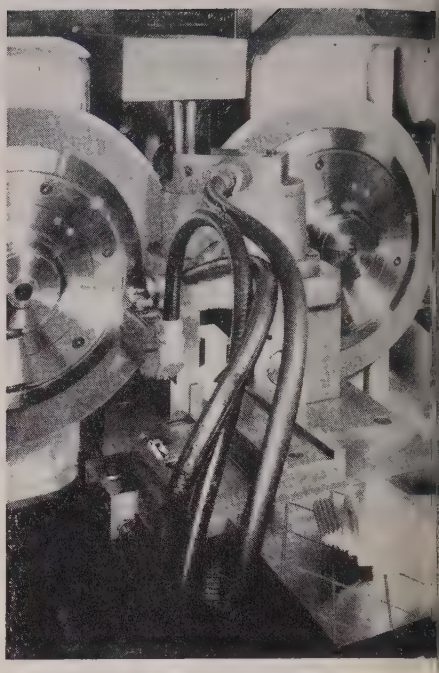
ITS "KICKS" LAST LONGER—Special annealing procedures and high-carbon steel are responsible for a new starter spring currently produced by Sandsteel Spring Division of Sandvik Steel Inc., New York. Made to meet requirements of power saws, power lawn mowers and small tractors, the spring provides improved recoil characteristics, even after long, severe use. Longer and thinner, it does not require a larger holder and provides more prewind and reserve power.

THEY'RE BEST COPIERS TOO—After studying Russian-built tractors, Caterpillar Tractor Co. concluded that the Reds have a keen knowledge of engineering and mechanics. Examination of two tractors captured in Korea shows the Reds successfully redesigned Caterpillar's product to fit metric dimensions. Careful attention was given where part finish and close tolerance were needed. Metallurgy was good and tractors are believed to be an assembly-line product.

Metalworking Outlook—p. 51 Market Outlook—p. 153



Front enclosure is off to give access for wheel and diamond change. Dials on cabinet are wheel motor controls. Camming gives constant surface speed



In foreground is matrix-mounted bucke Diamond dresser is shown at far rig

FINISHED IN ONE OPERATION

Grinding Shapes Both Sides of Jet Bucket Christmas Tree

Wheel surfaces are diamond dressed automatically to correct contour. Operator loads, unloads and presses the cycle start button. Machine does the rest.

SKILL and resourcefulness of high order is required on the part of all those engaged in manufacturing jet engine components. A special grinding machine developed by Jones & Lamson Machine Co., Springfield, Vt., unravels one of the knottiest problems in jet engine manufacture, that of machining the "Christmas tree" form on the holding end of the turbine bucket.

Not only is the job completed to the required tolerances, but operation is fully automatic. Operator just loads the machine and presses a cycle start button.

Shape of the ribs or branches on the bucket is generally buttress in form with the steep or holding side facing the blade section. Ribs taper steeply toward a shelf separating the holding end from the airfoil section. These ribs must fit closely into a corresponding shape broached in the rim of the turbine wheel. Deviation from true form, angles or spacing localizes stresses in one or more places while an accurately formed end divides the load equally among all the serrations.

The Problem — Turbine wheel with assembled buckets rotates at high speeds, driven by a flaming mixture of fuel and compressed air directed against the airfoil section of the buckets. Intense heat and high centrifugal stresses require using metals with a high percentage of nickel, chromium and cobalt. Not only are these alloys hard to work in the ordinary sense but also they must be worked to a high degree of accuracy.

Many ways of forming these ends have been tried. Nature of the material makes cutter costs high for milling or broaching.

The quality of finish and accuracy of form are also difficult to maintain. Grinding answers the finish problem and provides a better machining method.

Fancy Dressing—The compli- cated form required presents a problem in wheel dressing. Forms generally are nonsymmetrical and steeply tapered. At first no diamond dressing equipment available would true the whole form on the face of the wheel. The required form could be produced a section at a time on a master crushed roll, a corresponding form crushed into a grinding wheel and the wheel used for grinding buckets or other working crusher rolls.

Many turbine buckets were produced by this means, one side at a time. Although this method was a real step forward in the art of producing complicated forms by grinding, it had certain drawbacks. Bucket materials resisted grinding as they had all other types of machining, calling for frequent dressing and resulted in accelerated

eneral view shows operator in position for loading. At end of cycle wheels op, withdraw and door opens. Electronic precipitator evacuates oil mist

ERNEST V. FLANDERS
Chief Engineer, Thread Grinder Division
Jones & Lamson Machine Co.

ear rate on the form of the usher roll.

Increasingly close tolerances ade holding them impossible ithout using more and more usher rolls until the cost of rolls ecame prohibitive. A better way f doing the job was needed. As means of forming grinding heels, the diamond is unexcelled accuracy. Refinements in de- gn of diamond dressing equip- ent developed late in the war for uing multirib thread grinding heels and some nonsymmetrical orms for valve stems provided oth the accuracy and range re- uired.

Better Way—Path of the single iamond is determined by the hape on a former or template ounted in the top of the device. o change from one form to an- ther it is necessary to change ormer only, in most cases. Com- ared to crusher dressing, the dia- ond maintains a better form on e wheel since wear is relatively mall and inaccuracy produced by ear is of little consequence. Im- rovements in design and mounting ake diamond dressing more eco- omical than in the past.

Device allows user to grind wide ariations in form with no particu- r complications and lends itself automatic machine cycling bet- r than crush dressing. Crushing operation is complex and can be made automatic only if complicated controls are used. Diamond dressed wheel gives better size control over repeated dressing since the mechanism is not under a strain.

Full advantage of this type of dresser needed a new machine with two opposed wheels so that both sides of the Christmas tree could be ground in one operation. This required two dressers to act in unison.

The other features demanded: Automatic operation of the machine so the operator need only load and press a cycle start button; machine functions performed automatically like control of coolant, opening and closing of work loading door, work and truing feeds, work speeds, dressing cycle finish cuts, sparkout cuts; and machine versatility so that almost any combination of the foregoing could be worked out. Such a machine naturally required a considerable amount of engineering and care in design.

What It Takes—Nature of the material is such that extremely high loads are built up on the wheel motors. Two 20-inch wheels requiring a 20-hp dc motor for each wheel are necessary. Variable speed direct current motors are used, permitting maintenance of a constant peripheral speed at all times regardless of wheel size. As a further refinement, the change in motor speed is controlled automatically without operator attention through a simple camming arrangement mounted on the wheel slide. Work slide and feed mechanism both are hydraulically controlled.

Because of the shape of the piece and large quantities of coolant used, working area of the machine must be completely housed to prevent escape of oil vapors as shown in the accompanying illustration.

To take care of an excessive amount of oil vapor and smoke generated by the heat of the cut, each machine is equipped with some form of high voltage precipitator.

Also the coolant requirements are high, necessitating a large tank, but floor space is saved by using a vertical tank with a small sump tank for draining away used oil before returning it to the main tank by means of a sump pump.

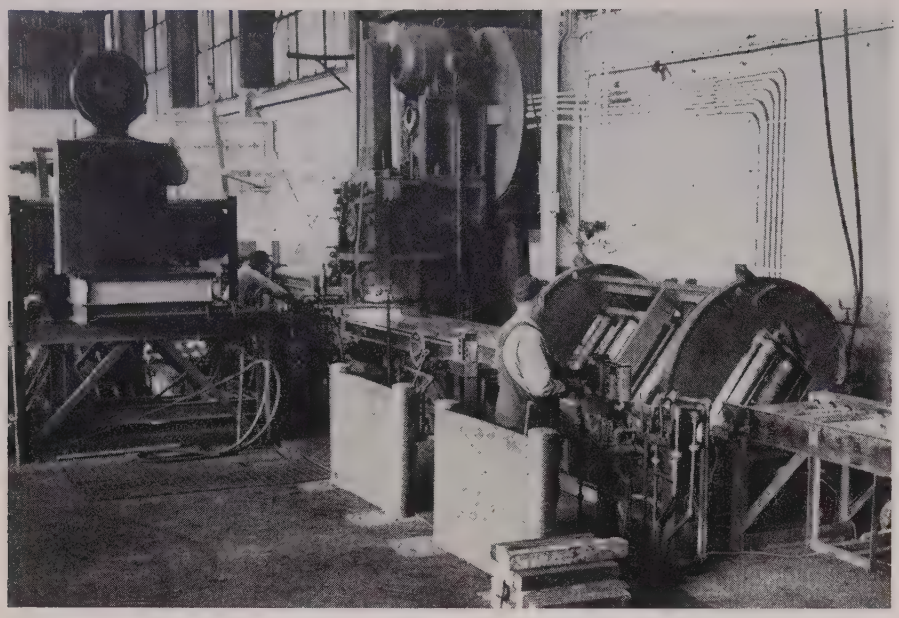
Relate To Materials—Materials to be ground are so tough and resistant to machining of any kind that wheel selection is especially important.

The whole grinding procedure must be carefully related to the particular material being ground. Most of these materials will work harden.

For this reason repeated sparkouts or light feeding cuts should be discouraged. Better grinding action is obtained if at least two-thousandths depth of cut is made.

Normally roughing cuts may run as high as ten-thousandths per pass. Rate of wheel penetration is determined by the work speed. Under some conditions a higher work speed and lighter cut is in order. Under other conditions heavier cuts and slower work speeds are found advantageous.

Wheel Loads—Machine can be operated through a wide range of both work speeds and work feeds. Frequent dressing is required, not because the wheels have broken



Shear-Turnover Unit Joins Cropping, Inspection

Special machinery is used to combine end cropping and inspection of cast brass bars at Chase Brass & Copper Co.'s Waterbury, Conn., mill. Mechanical shear at left crops the tail, then a conveyor moves the bar to turnover machine in the foreground. Operator revolves the piece in its cage, inspecting for surface defects before it moves off the conveyor onto a pile for passage to the sheet mill

down as far as form is concerned, but because the material tends to cling to the surface of the wheel and to fill the porous spots between the bond and grinding grits. It is therefore necessary to dress the wheel at least once for each piece in most cases.

One Operation Is Best—Experience indicates that it is better to finish the piece completely from the rough forging, although in one or two cases it has been advantageous to either broach or grind off the extra stock in a form of a slabbing operation, without attempting to rough machine the serrations themselves. This presents a more uniform working depth for the grinding wheels and has a tendency to produce a more uniform finish piece.

But all of these preliminary operations are expensive, however, and have been abandoned in most cases.

Few grinding jobs exist in which the requirements are more difficult than in this case. Starting with a rough forging, it is finish ground in a single operation to a degree of accuracy comparable to gage tolerances. Spacing between serrations must be within 0.0002-inch; taper within 0.0005; angles within 10 minutes and a thickness controlled within 0.0005 to 0.001-inch.

Coolant on the Spot—Unless the coolant is properly applied and the surface of the wheel kept in proper grinding condition, localized burning may appear on the ground form.

Although the burning itself is not particularly important, the effect of the burning is to change the actual form that is ground. Heat builds up and does not dissipate as in other materials. This causes the metal to expand at some local point, resulting in removal of stock which, when the piece cools, leaves a hole where it should not be. To prevent this, great care must be taken in the design and positioning of the coolant nozzles.

Even a very small deviation in the direction of the oil stream makes the difference between success and failure in overcoming this difficulty.

Many opportunities exist to improve process and technique in connection with this particular component.

The next few years will bring many changes in manufacturing methods if the demand for greater accuracy and more production on such parts is to be met.

London Handling Show

Emphasis in English handling equipment is on economy plus maneuverability

OVERHEAD crane operated by remote radio and television control, an adjustable loading ramp for lining up truck decks with the loading dock, and a fork truck without clutch or gearbox and having only three controls—these were among the highlights of Britain's third Mechanical Handling Exhibition at Olympia, London in June.

Exhibition occupied some 25,000 sq ft and about 200 firms displayed a wide range of equipment covering every aspect of handling.

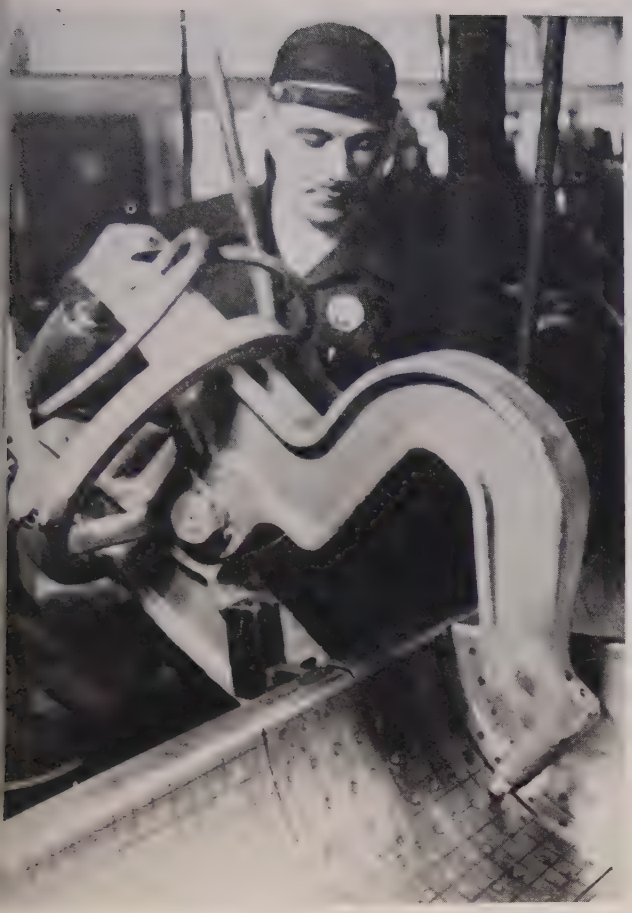
No Rack—Mobile type crane was featured which would lift and carry 10 tons. Another was designed to carry loads up to 20 tons. An overhead traveling grab had a compensating axle providing three-point suspension and eliminated racking on uneven rails.

Also shown was a semiautomatic skip hoist which, after tipping, automatically returned for refilling. On another type the bucket ran up an inclined track, tipped the load, and returned to the bottom, where it was reloaded automatically.

Point of Emphasis—Accent in the industrial truck field was on operating economy combined with manuverability. One company showed a fork truck suitable for both smooth floors and rough country, while another type was fitted with an automatic brake and control combined in one foot pedal.

Feature of one of the fork truck displays was the incorporation of a weighing unit on the dashboard which showed the net weight on the fork at the touch of a button. This device, the manufacturers stated, could be modified to fit any type of truck.

Conveyor manufacturers showed practically every industrial application. Exhibits ranged from the ground method, in which trolleys linked to a chain channelled in the floor could be delivered to various departments without an operator, to overhead systems one of which featured a trigger mechanism by which pendulum trays could be preset to offload on to other conveyors at selected points.



botwelding gun welds materials that can't be conven-ntly brought to a spot welder because of their size

SPECIAL REPORT

INDUSTRY sits up and takes notice as resistance welding proves to be an outstanding cost reduction means. High output speed, lower costs resulting from automatic equipment, machines that form as well as join, lower power costs may begin a trend

ETTING A PACE FOR COST REDUCTION

Resistance Welding Applications Increase

ELIVERING the last of a series f five lectures on electricity at the ranklin Institute during the hiladelphia Centennial was Elihu homson, later a co-founder of eneral Electric Co. To demonrate the function of an induction oil more dramatically, he brought vo wires together hoping to get brilliant flash. He got it, but he lso got something else. To his stonishment, the wires had fused. Iis audience had witnessed the rst resistance weld.

Ten years was to elapse before homson could produce in 1886 sufcient low voltage current to make practical electric welding machine. ut since the first crude one was rned out at Lynn, Mass., improvements have been steady and applications in metalworking increasing. For many plants engaged in joining and fabricating, it has meant the difference between red and black ink on the ledger.

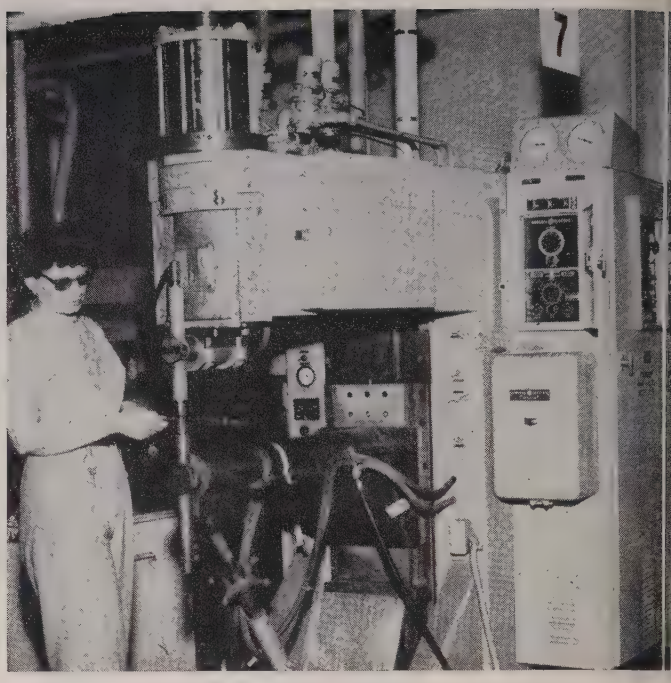
Today, with fabricating costs steadily mounting, more and more plants are turning to resistance welding for a way out. Any company whose output depends on the economical joining of metals might well take a second look at operations and determine whether or not this versatile process can be used.

Frequently it can. Yet advantages of resistance welding are too frequently bypassed because at first glance, some products do not seem to lend themselves to the process. Actually many products currently fabricated by other means could be adapted to resistance welding if certain design changes were made.

A manufacturer of refrigerator frames is a case in point. He redesigned them for projection welding, and production increased 260 per cent. In every application, cost reduction figures are impressive. Reductions in cost of 50 to 75 per cent are not unusual. Frequently they are higher.

Machine to Fit the Job—Key to maximum cost reduction is getting the right machine to do a job. Here advice of the manufacturer

Bench spot welders are employed for making welds on small parts such as the watch mainsprings shown here



Three-phase spotwelding with a control panel that regulates adjustments for forging, tailing and tempering

is a must, because using the wrong resistance welding process can be as costly as not using any at all.

For ordinary joining operations, there are a variety of stock machines available. These are versatile welders that can be used to perform a wide range of simple fabricating operations. The impressive production gains and cost reductions are obtained with special machines.

As might be expected, they cost more than stock models and lack versatility. Special machines can be used only to perform the operation for which they were designed. On the other hand, production gains more than offset this disadvantage. They pay for themselves in a short period of time.

Combination Machines — Automotive industries have been quick to avail themselves of the opportunities for cost reduction possible in combination machines. These perform several operations automatically. In some instances jobs performed are progressive welding operations, in others, welding and forming are combined. Machines of the latter type form and weld fender cones, steel drums and rectangular boxes.

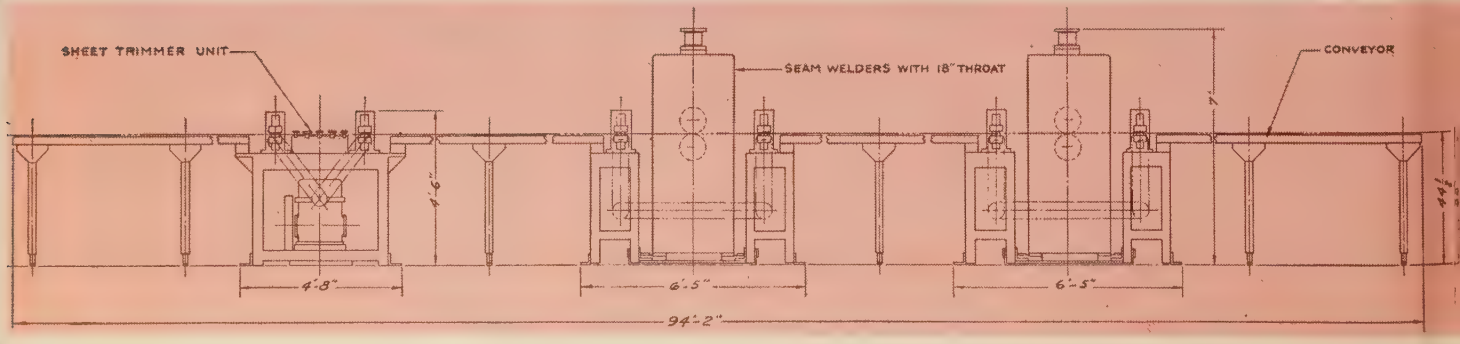
Also gaining prominence is the use of automatic feeding devices. Hopper feeding is especially well-suited to spot or projection welding of small pieces at high rates of speed. In this type of installation, pieces are fed from several hoppers to a cam-operated fixture where they are positioned and welded automatically.

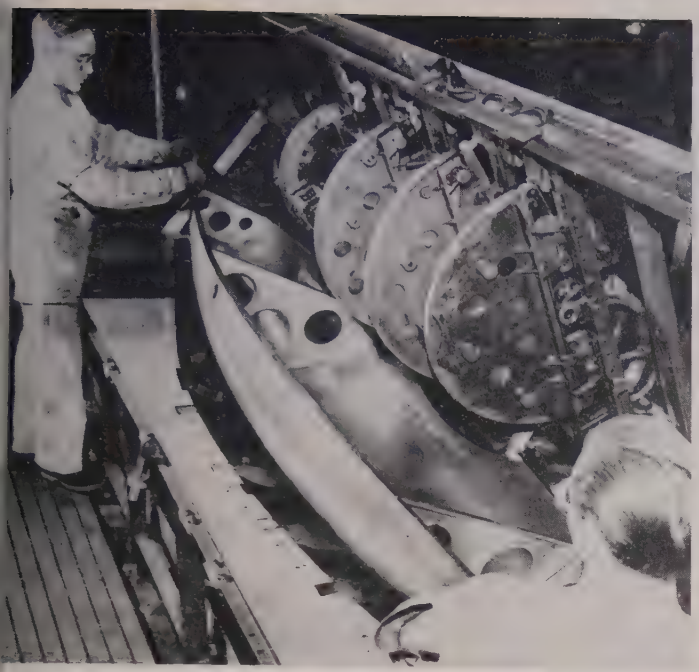
Welders that can be equipped with automatic feeding and unloading devices can spell real savings in manpower as well as production costs. Such machines require only occasional attention of an operator who can usually operate several.

Pick Your Metal—Possibilities in joining dissimilar metals by resistance welding include combinations of virtually every metal and alloy available to industry today. Nickel and molybdenum, for example, are joined for electronic tube assemblies; sterling silver and gold for costume jewelry. Stainless steel and galvanized strip, nickel plate and brass rod, brass and steel are other typical combinations.

Few limits are imposed on the manufacturer regarding the size of welded joint he can obtain. Fountain pen tips are resistance

Diagram of typical combination machine made by National Electric Welding Machines Co. Machine seam welds radiator fins at 150 feet per minute. Adjustable pinch roll drives allow the processing of various strip widths





esistance-welded joints reduce weight of auxiliary anks. Special resistance welding electrodes are used

Change from spot welding to projection welding resulted in a $30,000 per year saving in production of this part

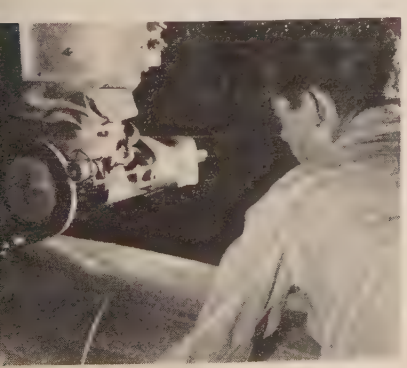
welded, as are the massive outer shells of railroad coaches. Components for huge aircraft are resistance welded, not only because a strong tight joint is obtained, but the elimination of rivets makes possible a better aerodynamic surface. As one manufacturer stated, the job you can do with resistance welding is limited only by the amount of money you want to spend (size of the machine) and the available power supply.

What Is It?—A review of the process may help to bring into sharper focus the many possibilities in resistance welding. In simplest terms, it is a combination of heat and pressure for a controlled period of time.

Pressure is supplied by water-cooled electrodes which also apply low-voltage, high-amperage current to the workpiece. As current flows from one electrode to the other, through the piece, it encounters resistance in the material and facing surfaces. This produces heat which quickly softens the workpieces at point of contact. Softened areas give slightly under pressure of the electrodes and the pieces fuse.

When current is shut off, the weld quickly cools into a single solid mass. The joint is composed only of the original material. Nothing is added. Peel tests easily demonstrate strength of a resistance-welded joint. While metal of the material breaks down, the weld itself remains intact.

Machines like this seam welder have helped the aircraft industry set new records in the production output



Types of Resistance Welding

Resistance welding process can be broken down into six general types. All of these have one feature in common: Heat and pressure are concentrated at the welding point, and time and amount is controlled to a fine degree.

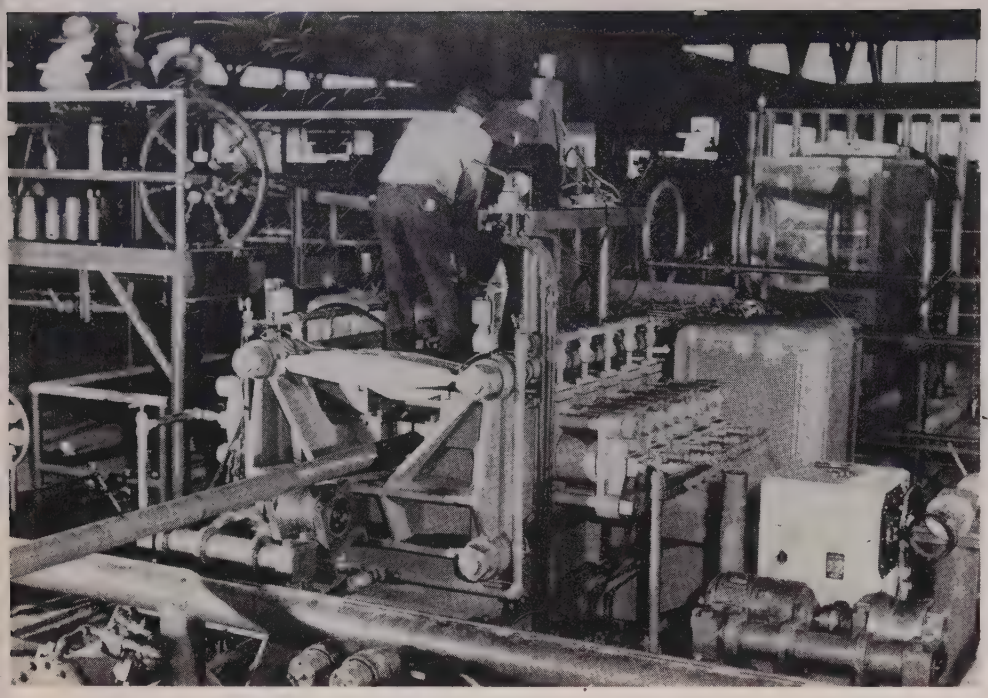
Spot Weld—Most widely used type is the spot weld. Workpieces are held between two electrodes connected to a high-current, low-voltage transformer. As current flows through the workpiece at the point of contact with the electrodes, heat forms due to the resistance of the metal. Metal at the contact point is softened, then electrode pressure fuses the metal into a tight cohesive joint.

Where a heavy weld is needed, and a great electrode force must be exerted, a press spot welder is used. The upper arm on this type of welder moves up and down vertically, driven by a pneumatic or hydraulic piston. An air cushion and regulating valve assure uniform force for each weld. Controls are set to determine the length of weld time.

If lighter welds are to be made, less electrode pressure is necessary, and a rocker-arm spot welder can be employed. Electrodes are opened and closed by swinging the upper arm on a fulcrum. An air cylinder and piston move the upper arm.

Bench Welder — Bench welders may be either the press or rocker type and are used for the smaller welding jobs. Majority of such welders are operated by foot controls, although both air or motor-operated welders may be obtained.

Spot Gun Welder—A versatile spotwelding tool is the spot gun welder, used widely for fabricating work involving articles of unwieldly proportions, and for welding joints in otherwise inaccessible locations. Some gun welders can be equipped with wheel electrodes and



Typical of size and type of job done in the industry today is this Swift welder for flash butt welding of oil-well tool joints. Quality of joint is important because failure can mean abandoning the well. Machine is automatic and has a hydraulic broach for removing inside burr of joint

Special feeding devices add to the automaticity of resistance welding. This Taylor Winfield projection welder is equipped with two hopper feeds

controls for seam or roll spot welding.

Projection Welding — Projection welds are similar to spot welds except that current flow is localized through projections or embossments. Concentration of the welding current is determined by the preparation of the workpieces rather than the size and shape of the electrodes. Broader electrodes may be used, reducing electrode maintenance. Several projections can be welded simultaneously since current divides itself equally among the projections.

When current is applied, the projections are softened by the heat, then deformed and flattened by the electrode pressure. Projections vary from a few thousandths of an inch to ⅛-inch or more. They may be produced by punch presses. Where shape of the piece rules this out, embossments may be obtained by machining.

Principal advantages of projection welding are: Good heat balance for welding difficult combinations; several welds can be made simultaneously; assembly fixtures can be used. Projection welding permits joining complex parts that otherwise could not be resistance welded.

Seam Weld — Sam welding is one of the best ways to obtain pressure-tight seams of high quality. In reality weld is a series of overlapping spotwelds made by bringing the work between rotating wheel electrodes. In some applications, a flat backing electrode supports the work while the seam is made.

Rotating wheel electrodes are also used to make roll spot welds. Where a pressure tight seam is not needed strong joint achieved is similar to that obtained by making a row of welds with a press-type spot welder.

Big advantage of the roll spot-welding process is the great speed that may be obtained. Difference between seam welding and roll spot welding is only that in the latter, current is timed so welds do not overlap. Current control depends on the speed with which the work is fed into the machine.

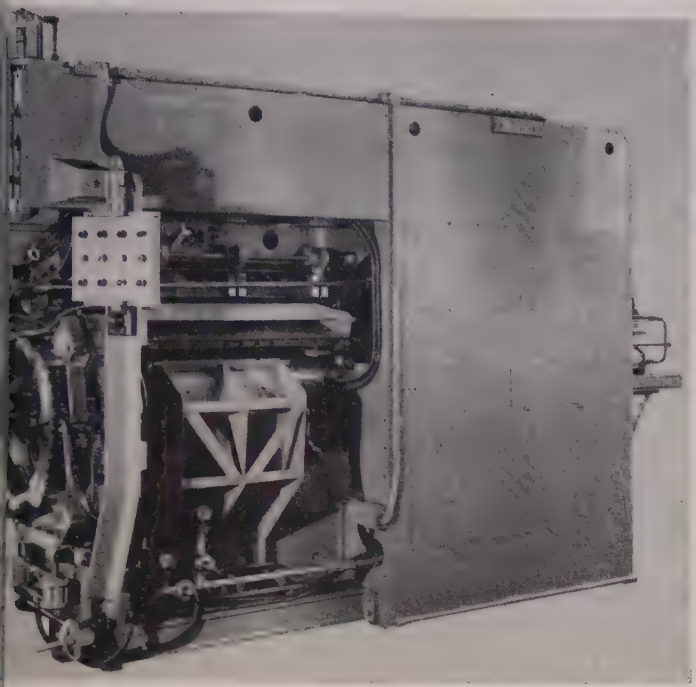
Wheel electrodes on the seam or roll spot welder are motor driven either through the axle or by a knurled drive wheel on the rim. Surface drive wheel assures a constant speed at the welding wheel rim without regard to variations in diameter due to trimming. It is possible to obtain seam welders having wheels with universal drives. These can weld in either direction without additional fixtures and offer great amount of flexibility.

Butt Welding—For welding the ends of pieces without an overlap, two processes are used: Upset butt welding and flash butt welding. In both processes, each electrode is a clamp which holds one piece. One electrode moves to bring the pieces together in upset butt welding. Then current and force are applied. When the weld is completed, some metal has been forced out of the joint.

While resistance of the metal produces the welding heat in upset butt welding, heat in flash butt welding is produced by arcing and by burning of gaseous metal in the arc.

The pieces to be joined are slowly moved toward each other as the metal is burned away. When correct amount of heat has been obtained, the pieces are forced together and the current is cut off. The plastic metal and the combustion impurities are forced out by the force of contact. Only clean metal remains in the weld. Impure metal around the joint is later ground down to the parent metal.

Percussion Welding — Another



Among advancements in resistance welding are machines that perform both welding and forming operations. Steel sheet is fed into this Federal barrelmaker which forms it into a cylinder, then welds the seam

Spot welders are often used to prepare work for a second welding operation. At Ryan Aeronautical Co., steel half stampings are spot-tacked into correct alignment for subsequent seam welding

form of flash welding is percussion welding, used for joining ends having a circular cross section. No transformer is used. Instead, the welding current comes from a capacitor bank connected to clamp-type electrodes. Workpieces are moved together, just as in flash welding. The capacitor bank discharges just before the two ends touch.

Welding Controls

Controls are the Aladdin's lamp of resistance welding, the secret of its great versatility. They are the brains behind a successful welding operation. With properly set controls, excellent, uniform welds can be obtained with relatively inexperienced operators.

While resistance welding is fundamentally a combination of heat and pressure, quality of the weld depends on correct application of both. Insufficient heat applied to a joint will mean imperfect fusion because metals at the joint will adhere superficially. Full strength will not be developed unless a sound weld is formed.

On the other hand, too much heat can be equally disastrous. The parts may be melted through to their outer surfaces causing electrode tips to mushroom out and stick to the metal. Without controls over the amount of heat, it would be quite possible to burn holes through the work.

Mechanical Control—Any type of resistance welding involves some kind of mechanical operation. Often such an operation occurs in a fraction of a second, as in spot or projection welding. With seam and roll-spot welding, speed of the electrode wheel must be controlled.

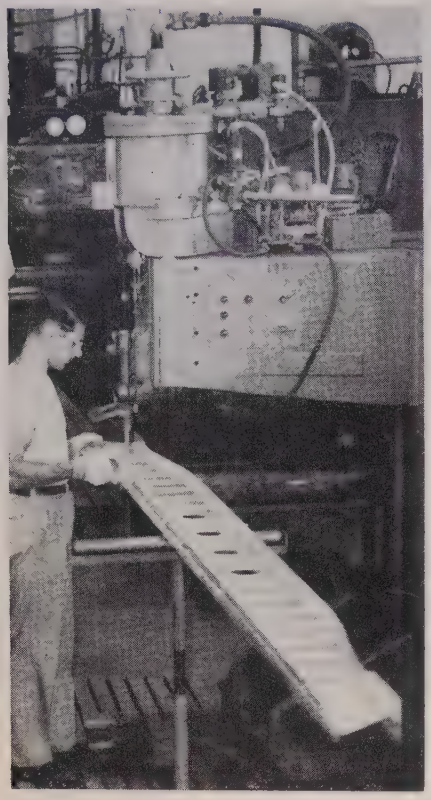
Regardless of the type of mechanical operation, it must be coordinated with the current supply. Further burden is placed on the control system by the variety of metals that can be welded. Not only does time and temperature vary with each type of metal, it varies also with the type of workpiece. The infinite variety of combinations of time, pressure and temperature can be successfully handled by the modern electronic control systems available today.

Good example of automatic welding control is Westinghouse's Timatic welding system. This further extends possibilities of resistance welding. It permits welding various combinations of material thickness without adjustment of welder controls by the operator after the equipment has been set up for a given operation. Control is automatic for any given thickness.

Spot and Projection Controls—There is little limit on the metals or the thickness of the workpiece that can be welded with spot or projection welding. A greater responsibility is placed, therefore, on their controls. Precision controls are especially necessary when welding aluminum, magnesium, brass alloys and thin gage metals, for example. By controlling welds automatically, improved weld quality and uniformity of results is assured.

Mechanical operations for spot or projection welding may be foot-operated or motor-operated with a cam control. In either event, four basic steps must performed. They are known as squeeze, weld, hold (until weld nugget freezes) and off. The various steps, each varying according to the metal and thickness, must be exactly coordinated with the current requirements.

While welds usually can be made in one current jolt, some applications require intermittent flow of current, with cooling intervals between current flow periods. These applications are called pulsation welding. Frequently they are used for projection welding,



Three-phase, electrostatic, stored energy spot welders are used at Ryan Aeronautical Co. in fabricating aluminum alloys. Units prolong tip life

Metals That Can Be Resistance-Welded

	Aluminum	Stainless Steel	Brass	Copper	Galvanized Iron	Steel	Lead	Monel	Nickel	Nichrome	Tin Plate	Zinc	Phos. Bronze	Nickel Silver	Terneplate
Aluminum	*			*							*	*			
Stainless Steel	-	*	*	*	*	*		*	*	*	*		*	*	*
Brass		*	*	*	*	*		*	*	*	*	*	*	*	*
Copper		*	*	*	*	*		*	*	*	*	*	*	*	*
Galvanized Iron		*	*	*	*	*	*	*	*	*	*		*	*	*
Steel		*	*	*	*	*		*	*	*	*		*	*	*
Lead					*		*				*	*		*	*
Monel		*	*	*	*	*		*	*	*	*		*	*	*
Nickel		*	*	*	*	*		*	*	*	*		*	*	*
Nichrome		*	*	*	*	*		*	*	*	*		*	*	*
Tin Plate	*	*	*	*	*	*	*	*	*	*	*		*	*	*
Zinc	*		*	*			*					*			
Phos. Bronze		*	*	*	*	*		*	*	*	*		*	*	*
Nickel Silver		*	*	*	*	*	*	*	*	*	*		*	*	*
Terneplate		*	*	*	*	*	*	*	*	*	*		*	*	*

Courtesy General Electric

multiple layer welding and for welding two pieces of steel having a thickness of ⅛-inch or more.

In any event, pulsating application of current and co-ordination with electrode pressure can be automatically controlled.

Seam and Roll-Spot Controls— Continuous current for seam or roll-spot welding cannot be used, except with extremely thin materials welded at a high rate of speed. Reason: Heat travels ahead of the wheel, oxidizing the adjoining surfaces of the work, and the welding wheel sinks in. Current must be provided intermittently so that spotwelds that overlap can be formed. Switching off the current is accomplished by electronic controls. They can be preset to time the number of cycles of heat time and cool time for any type of material of any thickness. By co-ordinating speed of the material through the electrodes with the heat and cool time, the spot welds overlap.

The Power Supply

Big bugaboo that scares many potential users of resistance welding is its high power demand. The fact must be faced that it takes current and lots of it. However, the picture is not as bad as it is often painted. Nor is there a lack of methods to obtain the best utilization of power with a minimum expenditure. When the advantages of resistance welding are weighed, the scales tip in favor of the process because of the speed, quality and economy that is possible.

Power Company Helps — Although a power company is in the business of encouraging maximum consumption of power, it prefers a consumption that will not produce a varying power demand. Load drawn by resistance welders can pose a problem of low power factor and extreme voltage variation—both costly to the user, and perplexing to the power company.

Most power companies are more than willing to analyze a customers power requirements for resistance welding and point out a way that power can be used most efficiently. An easily understood example occurs where a company is planning to use several spot-welders. While the company will get a special rate for intermittent power service, (short peak loads while welds are made) there is an additional saving available, if the company has a production setup involving several machines.

These machines can be interlocked so that big current inrushes which raise power cost are eliminated. This can be best explained by a hypothetical case of two machines both having a 500-ampere demand. If they come on at the same time, current rush is 1000 amperes. Power can be scheduled to take advantage of the power requirement diversity. As one machine goes off, the other comes on. Current inrush is more constant, power cost is lower.

Heavy kva demand is especially noticeable when low resistance metals, such as aluminum are being welded. This demand can impose overloads on the power distribution system, and affect efficient operation of other machines. One means of combating this overload threat is a stored energy system, of which there are three types: Inductor type, capacitor type, the storage battery type.

Three-Phase Systems — Where the power supply is inadequate, usually in sparsely settled areas, or in heavy industrial communities where power demand is high, three-phase equipment can be used. Three-phase equipment is advisable only if power supply is inadequate. This type of welder is more costly and more complicated.

It is possible to obtain a three-phase frequency changer, which by means of electronic tubes converts three-phase, 60-cycle power to single phase power at four to twelve cycles per second. This type of equipment is helpful if power factor is low as sometimes occurs when single phase equipment is used.

Electrodes

More than a mere conductor of electricity through a workpiece, a resistance welding electrode is an important factor in securing high quality welds. Electrodes vary from metal to metal, from job to job. Production of electrodes to take

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At the Carbon Limestone Company, Hillsville, Pennsylvania, pulverized limestone leaves a series of crushers, screens and heat dryers and drops stinging hot upon this Republic Rubber-Glass Belt. The work is continuous. But despite temperatures that exceed 300°F., up to 80 tons of material are handled during a single hour without harm to the belt.

This Republic Rubber-Glass Conveyer Belt carries tons of smoldering sand for one of the world's biggest foundries. Temperature of the sand runs as high as 400°F. Mixed within the sand as it travels from shakeout racks to reclaiming stations are red-hot pieces of jagged metal. Despite the difficult work conditions, this Republic Rubber-Glass Conveyor Belt is giving ten times more service than the belt it replaced!

International Minerals & Chemical Corporation uses Republic Super Excelo Hot Material Belting to carry hot potassium salts through their Carlsbad, New Mexico, plant. The belt operates 20 hours per day. The load runs an average 325°F. temperature, yet the belt's performance record is considered to be "excellent."

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- Auto and Truck Parts
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  - Frames
  - Brackets
  - Seats
  - Levers
  - Oil Pans
  - Cabs
  - Wheels
  - Rims
  - Fuel Tanks
  - Shock Absorbers
  - Axle Housings
  - Mufflers
  - Carburetors
  - Ignition Parts
- Grease Guns
- Trailers
- Spark Plugs

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- Trays
- Baskets
- Guards
- Racks
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- Mesh
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COMMUNICATIONS
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  - Magnets
  - Jacks
  - Instruments
  - Switchboard Parts
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INDUSTRIAL EQUIPMENT
- Stokers
- Utility Baskets
- Pallets
- Rings
- Band Saws
- Crates
- Cabinets

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- Furniture
- Partitions
- Typewriters
- Adding Machines
- Addressing Machines
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- Aircraft Parts
  - Fuselage
  - Landing Gear
  - Mounts
  - Guards
  - Exhaust Rings
  - Wing Assemblies
  - Tail Assemblies
- Wheels

BUILDING CONSTRUCTION
- Gutters and Drains
- Ornamental Iron Work
- Metal Signs
- Sash
- Mouldings
- Partitions
- Light Trusses

HARDWARE
- Drills
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- Hand Trucks
- Pulleys
- Flashlight Cases
- Tool Handles

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- Cots
- Diaper Cans
- Dinner Pails
- Dishpans
- Double Boilers
- Dustpans
- Fountain Pens
- Flour Sifters
- Frying Pans
- Funnels
- Garbage Cans
- Garment Hangers
- Heaters
- Heating Pads

ELECTRICAL INDUSTRY
- Industrial Control Enclosures, Devices
- Switchgear Frames, Devices
- Air Conditioning Parts
- Meters, Instruments
- Electronic Tubes
- Radio Equipment
- Transformer Tanks
- Motor Frames

- Hot Plates
- Ironing Boards
- Flat Irons (Gas, Electric)
- Kettles
- Lamps
- Laundry Machinery
- Lawn Mowers
- Lunch Boxes
- Pails, Buckets
- Oil Burners
  - Percolators
- Quick Freeze Units
- Refrigerators
- Sauce Pans
- Screens
- Spray Guns
- Stokers
- Strainers
- Sweepers
- Tea Kettles
- Umbrellas
- Vacuum Bottles
- Vacuum Cleaners
- Wash Boilers
- Tubs
- Wash Boards

RAILROADS
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- Railroad Coaches
- Railroad Sleeping Cars
- Boiler Flues
- Locomotive Cabs

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- Toys
- Shipbuilding
- Surgical, Dental Supplies
- Farm Implements
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- Optical Goods
- Fabricated Tubular Parts
- Bicycles
- Boxes
- Barrels
- Finned Tubing
- Hot Riveting
- Upsetting
- Church Goods
- Brooders
- Cream Separators
- Fishing Equipment
- Fountain Pens
- Harness
- Motion Picture Projectors
- Pen Nibs
- Photographic Equipment
- Pickaxes
- Shovels
- Tanks (Storage, Water)

Courtesy General Electric Co.

care of the myriad of welding jobs is an industry in itself, an industry that has made important contributions to the advancement of resistance welding.

Typical is the heavy duty electrode holder developed by P. R. Mallory Co. for spot welding applications requiring welding force in excess of 6000 pounds. Such high welding forces are required for components in ordnance equipment, aircraft structures and jet engines.

Without these forces, sound welds on stainless steels and newer high-temperature, heat resisting alloys would be difficult to obtain.

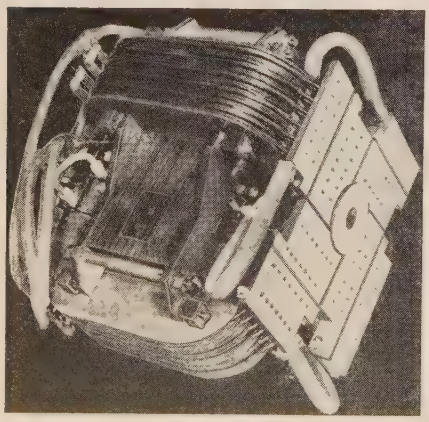
Another development showing many advantages in projection and spot welding is the magnetic electrode.

Pressure is applied to the electrodes of a resistance welding machine by application of an electro magnet incorporated in the welder secondary circuit.

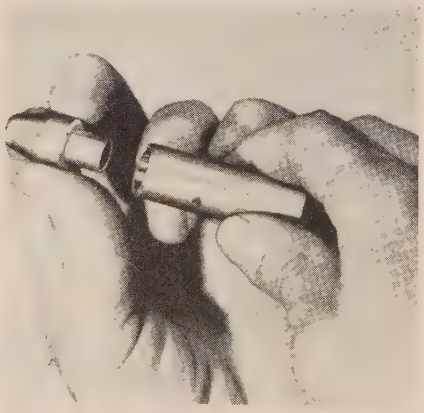
This type of electrode makes possible an extremely accurate current - force - time relationship that permits welding previously difficult materials with a high degree of uniformity. Much of the development work has been done at Precision Welder and Flexopress Co., Cincinnati.

ACKNOWLEDGEMENTS

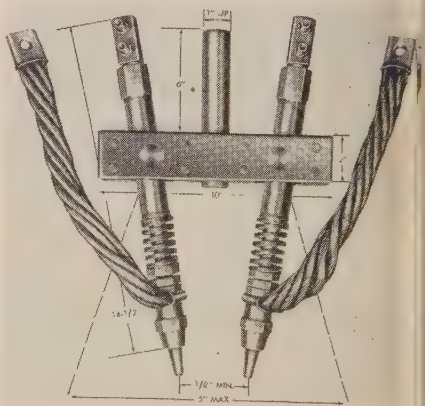
Robotron Corp., Detroit
Thomson Electric Welder Co., Lynn, Mass.
P. R. Mallory Co. Inc., Indianapolis
National Time & Signal Corp., Detroit
Square D Co., Milwaukee, Wisc.
Acro Welder Mfg. Co. Inc., Milwaukee
Eisler Engineering Co. Inc., Newark, N. J.
Westinghouse Electric Corp., E. Pittsburgh
General Electric Co., Schenectady, N. Y.
Nat'l. Elec. Welding Mach. Co., Bay City, Mich.
Precision Welder & Flexopress Co., Cincinnati
Sciaky Bros Inc., Chicago
Peer Inc., Benton Harbor, Mich.
Acme Electric Welder Co., Los Angeles
Weldex Inc., Detroit
Swift Electric Welder Co., Detroit
American Electric Fusion Corp., Chicago
Resistance Welder Corp., Bay City, Mich.
Link Welder Corp., Detroit
Welding Machines Mfg. Co., Detroit
Agnew Electric Co., Milford, Mich.
Fansteel Metallurgical Corp., Chicago
S-M-S Corp., ,Detroit
Multi-Hydromatic Welding & Mfg. Co., Detroit
Progressive Welder Co., Detroit
Expert Welding Machine Co., Detroit
Taylor-Winfield Corp., Warren, O.
Federal Machine & Welder Corp., Warren, O.
American Welding & Mfg. Co., Warren, O.
Yoder Co., Cleveland
Universal Welder Corp., Cleveland
Cecil C. Peck Co., Cleveland



High impedance of a single large transformer is eliminated by this Yoder 4-in-1 cross type unit for tube mills



Replaceable resistance welding electrode, a new development, results in savings in copper, costs, inventory



Angle adaptor of S-M-S Co., converts standard spot welder of sufficient capacity into multiple spot welder

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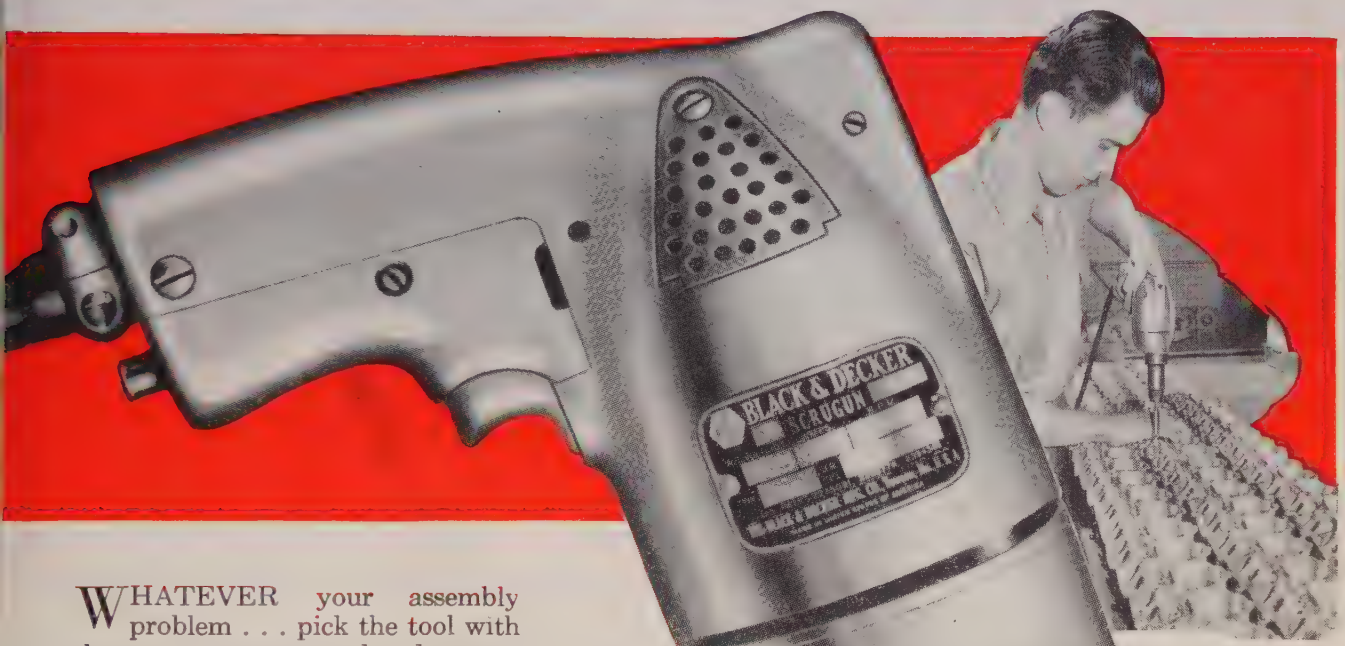

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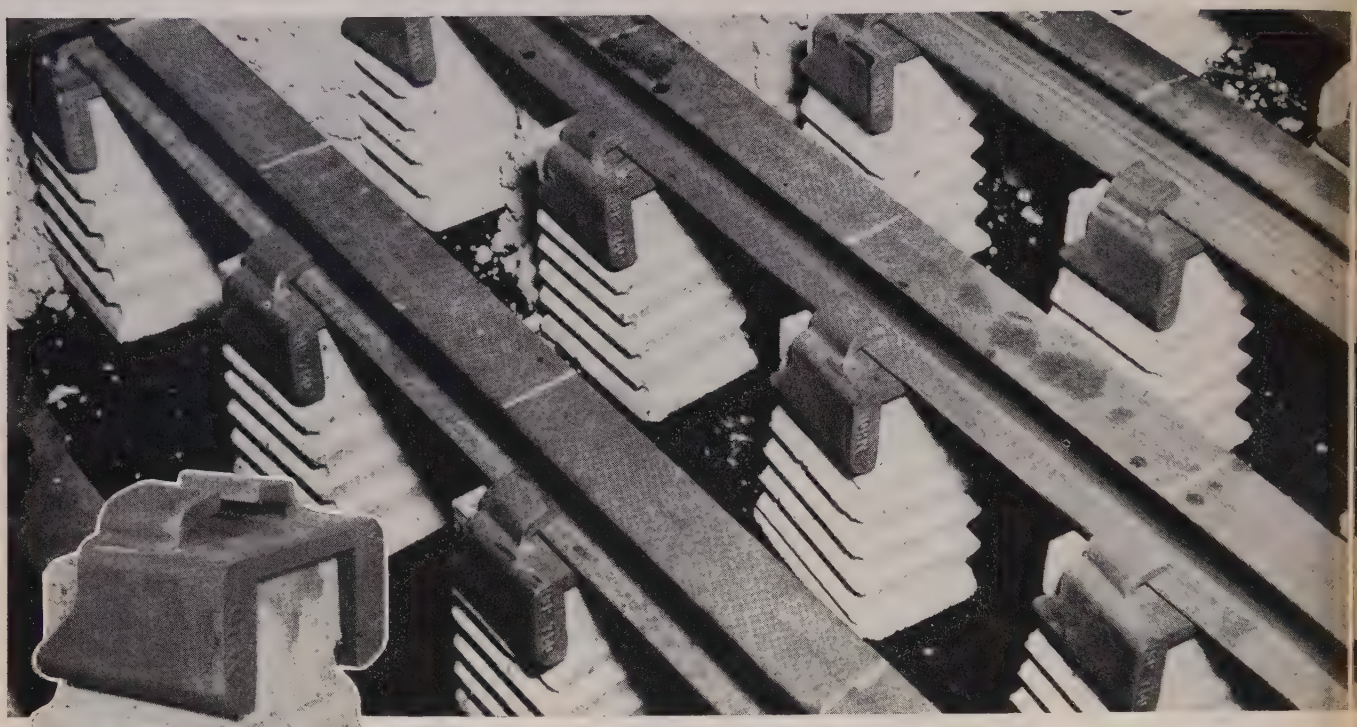

Fig. 2—Anchor assemblies in position on I-beams

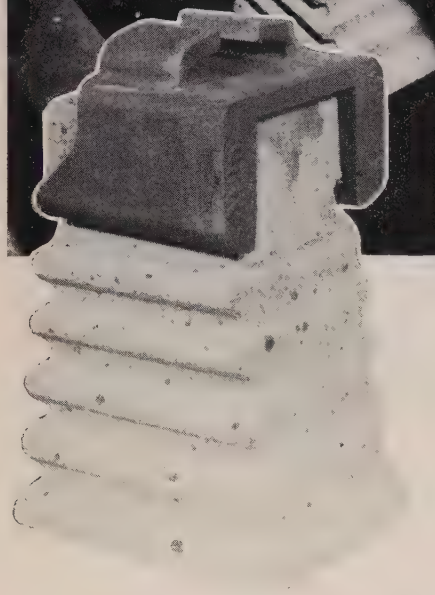

Fig. 1 — Anchor assembly—casting and high temperature refractory

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By W. B. SMITH
Manager, Specialties Division
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St. Louis

CASTABLE refractory material with suitable anchor assembly for monolithic soaking pit cover linings made its initial appearance in the steel industry about three years ago; today innumerable poured covers are in operation.

A castable refractory should have a low porosity calcined base with the particles sized and balanced in such a manner that when the material is poured to a thickness of 6 to 9 inches, the mass will have density and the interstitial space between grog grain will be minimum. Materials should set up hard without heat, have a good modulus of rupture per square inch after pouring and show little drying and firing shrinkage. For intermediate service the refractory value of the material selected should be in the temperature range of 2700°F; for severe service the range should be 3000°F.

Anchors Impart Stability—Anchoring of the castable material plays an important part in the results of a poured cover before and after being placed in service. Anchors add strength to the air-dried castable material to permit handling and moving from the form to the soaking pits.

After burning in, a ceramic bond is developed in the castable and the anchors then tie the monolithic mass to the supporting I-beams. Fig. 1 shows one type of anchor assembly now in use. The anchor is a superduty quality refractory which has been burned at a high temperature; it has a low porosity and a high modulus of rupture. The casting is made of Meehanite metal.

Attention should be given to the bracing of the frame to eliminate deflection and distortion during the opening and closing operations. The 3 or 4-inch I-beams for the anchor assembly support are located on approximately 12-inch centers. Beams can be welded to the frames lengthwise or crosswise. Each of the anchor support beams are allowed to rest without welding on the top of the shell angles which are welded to the side members.

Methods of Pouring—A wood or sand form made to the inside dimensions of the frame is placed upon the floor. The cover is put into position to entirely encase the form and after the anchor assembly is placed upon the I-beams, a

Here's More Proof of B&W Allmul Firebrick Performance

BILLET HEATING FURNACE

"ALLMUL more than doubles life of lining"

A large manufacturer was faced with high refractory maintenance in the discharge zone of a side-discharge billet heating furnace. Combustion chamber temperatures were 2600F-2700F. Production was high—a billet was discharged every 30 seconds. Thermal shock and high temperatures caused various semi-mullite refractories to fail in 5 to 6 months. Then this area was relined with B&W Allmul Firebrick. Result: Allmul stood up for 13 months—2 to 2½ times as long!

ELECTRIC FURNACE ROOF

"ALLMUL lasts 3 to 6 times as long"

In a six-ton electric furnace, handling 15 tons of stainless steel per charge, super duty firebrick had to be replaced every 20-40 heats. Pouring temperature of the metal was in excess of 3100F, with higher temperatures attained in the furnace during periods of oxygen introduction. The owner installed B&W Allmul Firebrick, hoping for a life of 80 heats. Allmul in the first roof lasted for 122 heats—42 more than hoped for. The second roof of Allmul went to 131 heats! Result? Additional orders for B&W Allmul.

INDIRECT ARC FURNACE

"All furnaces converted to ALLMUL after comparative tests"

A large company making alloy steel castings has several indirect arc furnaces melting various alloys, with pouring temperatures varying from 2700F to 3100F. With highest temperature alloys, semi-mullite brick burned out in 6-10 heats. B&W Allmul, which cost approximately the same, showed no appreciable wear after 20 heats. On alloy steels in general, this customer reports far less slag formation (an indication of reduced refractory wear) with Allmul than with any other refractory used. Result: All furnaces are being relined with B&W Allmul Firebrick.

FORGE FURNACE HEARTH

"ALLMUL lengthens life, keeps dry hearth"

A drop forge company was faced with this problem on its 72" wide slot-type furnace operating at 2350F-2400F: Low cost refractories gave soupy slag on the hearth, affecting product quality and die life. More expensive refractories, including chrome plastic and chrome firebrick, eliminated liquid slag, but their life was so short that their use could not be justified economically. A completely new hearth was installed consisting of 4½" of Allmul on top of 2½" of B&W Junior and 5" of B&W IFB. Result: Completely dry bottom; easy removal of scale; *and Almull was in good condition after 5 months of operation.* Based on this performance, additional Allmul hearths were ordered.

Yes, the facts about B&W Allmul Firebrick speak for themselves. This fused mullite brick is proving its economy in dozens of severe service applications. The reason? A unique combination of refractory properties—high hot load strength, high resistance to spalling, good volume stability, a high melting point of 3335F—all resulting in lower furnace costs. Want more data? Write for Bulletin R-29.

BABCOCK & WILCOX

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REFRACTORIES DIVISION
GENERAL OFFICES: 85 LIBERTY ST., NEW YORK 6, N.Y.
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R-4358

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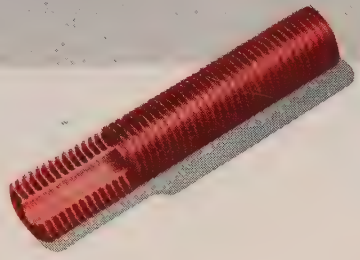
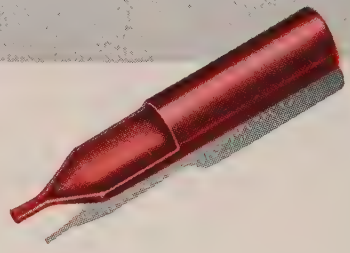
2 WOLVERINE DEVELOPMENTS THAT SHOULD COMMAND YOUR IMMEDIATE INTEREST

These developments are only two of the many that Wolverine offers. They represent new opportunities for designing tubular parts which will require the use of less material, and will improve production efficiencies. They are important contributions to the defense program and help to utilize the available copper to the best advantage.





WOLVERINE TRUFIN*

Because of its unique construction, Wolverine Trufin* will withstand vibration and sudden temperature changes without impairing heat transfer qualities. The ratio of outside surface area to inside surface area is often as high as 19 to 1. Such high ratios permit smaller, more compact and usually more efficient operating units, which in turn makes for fewer components and less material, as well as substantial saving of labor in assembly.

*Reg .U. S. Pat. Off.

SPUN END PROCESS*†

is a fast, economical and efficient method of forming the end of tubular parts. It has, in many cases, supplanted other methods of fabrication. The spun end process can produce a wide variety of end forms ranging from long shapes to sharply turned ends—with or without apertures.

This process brings you lower costs in construction and assembly which is of such vital interest to all industry.

*† A Patented process RE 22465

Send for more detailed information about these Wolverine tube developments.

Wolverine Trufin and the Wolverine Spun End Process available in Canada through the Unifin Tube Co., London, Ont.

WOLVERINE TUBE DIVISION

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Fig. 3—Poured cover ready for puddling to eliminate air spaces

nown in Fig. 2, the cover is ready
be poured. Castable refractory
in be applied to any size flat or
rched covers.

Castable refractories can be
ixed in a concrete mixer or man-
ally; the water to be added to the
ix should be carefully controlled
the amount specified. After the
stable is mixed thoroughly, it is
oured into the frame and puddled
eliminate air spaces and to work
around the anchors. See Fig. 3.
finished cover is shown in Fig. 4.

The life expectancy of a poured
over depends upon operating con-
itions, the type fuel used, main-
enance of the coping tile, maxi-
um operating temperatures and
he mechanical action when open-
ng and closing the pit. Based upon
ood operating conditions, the life
xpectancy of a poured cover is in
xcess of two years; where severe
perating conditions are encoun-
ered the service life is as low as
even months.

At a representative soaking pit installation, 43 covers each with an area of 6 x 10 feet and poured with a castable refractory, had an average life of 7.2 months. The materials and labor cost to install a poured cover was $469.30. While the material cost is higher than fire brick, it is less than preburned special shapes; the longer service life, however, more than offsets the additional cost. The time required to pour one cover was approximately 5 man-hours, so that the labor saving on the 43 covers was $1577.

New Pusher Produced

New pusher unit developed for contractor using dozers exclusively as pushers is announced by R. G. LeTourneau Inc., Peoria, Ill. Pusher is a redesigned version of the firm's model C, with blade, power control unit, A-frame and dozer controls omitted. In place of these is a massive billet, 3 x 15 inches, spanning the machine's width. Pusher plate is placed on the billet.

Tool can be equipped with a torque converter as original equipment; is equally adaptable to pullying operations. It is built for operating in clay, rock or muddy conditions where a high-traction tire is necessary.

Fig. 4—Finished cover ready for service

Take Care of Metal Hose

Manufacturer's tips on care and use of flexible metal hose can save you dollars

IF YOUR work involves installation of flexible metal hose, here are some tips advanced by Titeflex Inc., Newark, N. J., for effective operation and long life. Company says the suggestions will pay off in many applications varying from laundry equipment to fuel lines for jet engines.

Even the best material can serve its purpose fully only when installed carefully. Each installation requires study to determine the most suitable arrangement that will avoid conditions detrimental to hose life and effective operation. The following suggestions based on years of experience have been compiled for users by the engineering department of Titeflex.

Long Enough?—First advice is to use correct hose length. Sufficient hose length should be provided to avoid sharp bends at fittings. The right length of hose can be determined from a table for that particular hose diameter or it can be calculated.

Avoid twisting and compressing the hose. Unless proper care is exercised, metal hose is frequently twisted and compressed during installation. These forces deform braid strands and eventually the hose supporting braid breaks.

Don't Twist—Install hose with fitting parallel. Use two wrenches to avoid twisting. Undue strain and twisting detrimental to long hose life can be avoided by making certain that flexing of the hose takes place in one plane only.

Avoid S bends. By permitting hose to follow its natural bend, it will last longer and give more satisfactory service.

Support hose properly. Long runs of hose continually flexing near fittings due to movement or

IS THERE A DIFFERENCE IN ABRASIVE LIFE?

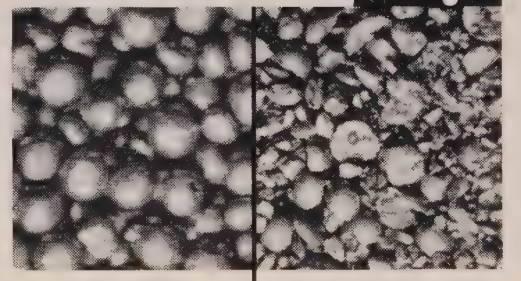
With all manufacturers claiming longer life for their abrasives, it's time to review the facts. Iron shot is still iron.

Through annealing, drawing and other processes the life of some chilled iron abrasives has been increased so they can be sold as premium abrasives. BUT iron shot DOES NOT HAVE THE LIFE OF STEEL.

Only Tru-Steel Shot has the toughness and life of true steel. It is made of high carbon steel that has received a full heat treatment. That's why Tru-Steel Shot maintains its size and shape longer, giving many more hours of efficient blast cleaning.

LIFE COMPARISON

Tru-Steel retains its shape after 1500 passes. Chilled Iron breaks down after only 50 passes.



TRU-STEEL *No. 230 at Mag. 10X*

CHILLED IRON SHOT *No. 230 at Mag. 10X*

Other premium abrasives claim long life too but comparative tests prove Tru-Steel's superiority. For example, the results of a typical test made by a prominent manufacturer show the following cost per hour:

Abrasive "A"	**$ .67**	**Abrasive "B"**	**$ .978**
Abrasive "C"	**$1.33**	**Tru-Steel**	**$ .467**

Profit by the results obtained by satisfied Tru-Steel users. Send in a trial order today — prove for yourself how you too can save.

GET THE FACTS - *Bulletin 59-A shows where the average cleaning dollar is spent and how savings can be made. Send for your copy today.*

American
WHEELABRATOR & EQUIPMENT CORP.
509 S. Byrkit St., Mishawaka, Ind.

TRU-STEEL SHOT

vibratory action should be appropriately supported to prevent failure at these localities.

Bearing Testing Improved

BETTER quality control and reduced testing costs are the result from use of an electronic metals comparator at a Cleveland automotive manufacturing plant.

The comparator is a General Electric product designed to detect and indicate metal hardness variations by measuring differences in magnetic characteristics. In this application, it is used to test universal trunnion yoke bearings.

The bearings, used in truck universals, are small cylindrical steel objects in which needle bearings are enclosed. To withstand wear, inside surfaces must be carburized and specially heat treated.

Uniform Product—After heat treating, the auto company runs a complete inspection on the bearings to assure a uniform product. This is done, the firm's engineers say, to weed out units not properly hardened, due to mechanical irregularities or human error.

Previously, it took three employees working full time to keep the test line moving at the rate of 1000 pieces per hour. Now, one girl does the job working part time with the comparator.

One-Step Process—An electronic assembly mounted on a steel cabinet and a test coil set into a work bench comprise the tester. Operation is a simple one-step process. As each untested bearing comes down the line, it is inserted into the coil. The dial indicates whether or not the part meets specifications.

Electronic assembly includes a balancing network, an oscillator and an indicator. Equipment operates from single-phase, 60-cycle 110-v commercial supply.

Alloy Shipments Color Coded

System for color-coding shipments of alloys and metals to speed identification, handling, inventory and checking is reported by Vanadium Corp. of America. Labels are used for drums, cards for freight cars and tags for bags. One color is assigned to each major alloying

MONARCH CATALOG — HANDBOOK OF INDUSTRIAL TIRES
CONTENTS
SOLID FACTS - - - - - - - - - - - - - - - - - - 2
Solid and cushion tires are used so widely for materials handling because they offer several advantages no other kind of tire can match. Check the advantages of Monarch Tires against your own requirements.
TYPES OF MONARCH INDUSTRIAL TIRES - - - - - - - - - 3
Misfit tires can knock your tire costs sky-high. This analysis of the several types and compounds available in Monarch Tires will help you find the tire that best suits your application.
HOW TO GET MORE TON-MILES PER TIRE - - - - - - - - 4
A sound program of tire care will make your cost figures look a lot brighter. Monarch's Service Department offers some suggestions to help you round out such a program.
CUT THE COST OF BUMPS - - - - - - - - - - - - - 6
Jars, jolts, shock, shock load, and just plain bumps are expensive. You'll be surprised when you see how many ways Monarch Mono-Cushions, the top industrial cushion tires, can reduce your materials handling costs.
TOUGH TIRES FOR TOUGH JOBS - - - - - - - - - - - 8
This group of rugged pressed-on tires takes heavy loads and rough going at low ton-mile cost. Special purpose compounds available.
SOFT TOUCH FOR FLOORS - - - - - - - - - - - - - 10
Thousands of tons of materials are handled piecemeal on hand trucks, pushcarts, light trailers, and the like. Here's a way to cut the cost of this traffic, make operators happier.
TIRE SPECIFICATIONS
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CURED-ON TIRES - - - - - - - - - - - - - - - 11
EQUIPMENT MANUFACTURERS' SPECIFICATIONS
Here's the easy way to buy tires. Just look up the model number of your vehicle under the appropriate manufacturer's name. Tire sizes are listed for all model numbers available when this catalog went to press
AUTOMATIC TRANSPORTATION CO. - - - - - - - - - 12
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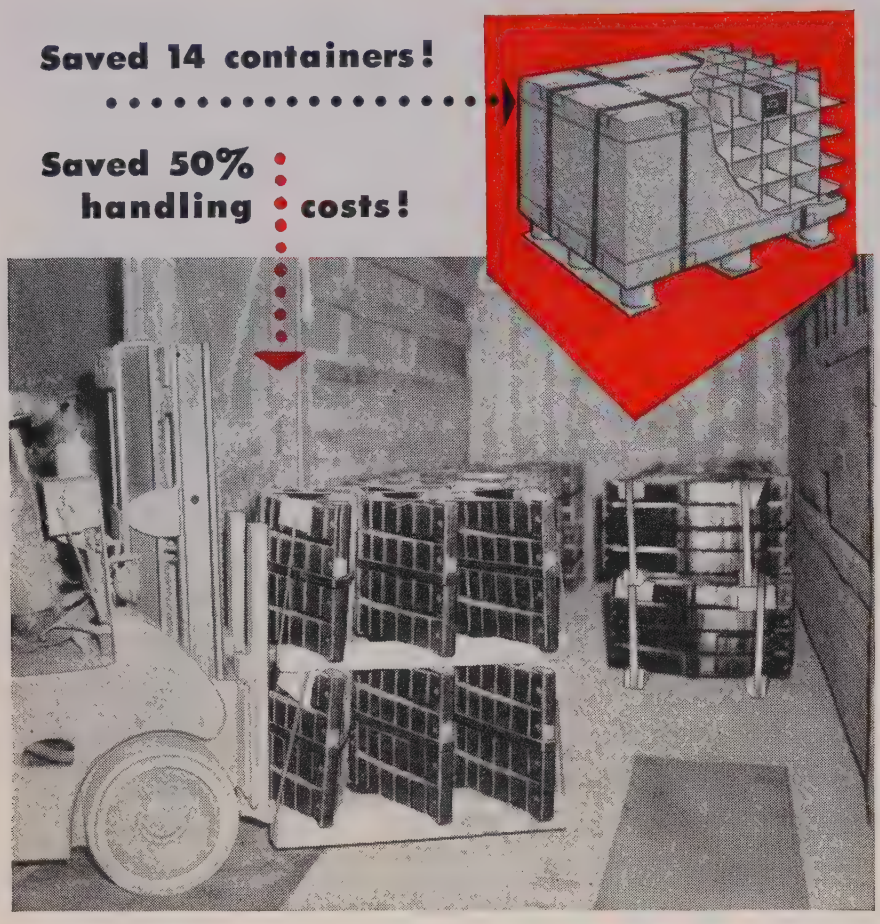
YALE & TOWNE MFG. CO. - - - - - - - - - - - - 26
The manufacturer of your vehicles can supply you, through his service branches, with Monarch Tires engineered for your application. THE MONARCH RUBBER COMPANY, 10 LINCOLN PARK, HARTVILLE, OHIO.
MONARCH CATALOG AND HANDBOOK OF INDUSTRIAL TIRES
MONARCH

"INSIDE INFORMATION"

on the NEW MONARCH CATALOG

NEED A COPY?

Wherever hand or motor powered industrial vehicles are at work there is a need for the valuable facts and figures within this catalog. Just send your name and title on your company's letterhead to The Monarch Rubber Company, 300 Lincoln Park, Hartville, Ohio, and your copy will be on its way.



SIGNODE OFFERS YOU BETTER STRAPPING METHODS*

Even your "best" can be improved. A manufacturer of TV transformers formerly shipped 168 units in 15 cartons. Signode helped them work out a multi-unit package combining 175 units in *one*—bound into a compact pallet load with Signode steel strapping. This application was easy to work out but . . .

this one was a toughie!

Diesel springs, heavy and unwieldy, formerly were shipped loose in railway cars. At the point of assembly, each of eight component parts of the spring had to be handled separately. Signode, with the foundry men, worked out a new idea. Three pre-bundled spring assemblies were strapped onto an inexpensive pallet. When the springs reached the assembly line, the steel strapping was left on the individual spring bundles until they were mounted in place. This bundle method cut handling costs 50%!

we'll help you, too!

If you want to try palletizing for the first time, or improve your present methods, we'll help you, too. To have a Signode man call, write

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this seal means security in shipping

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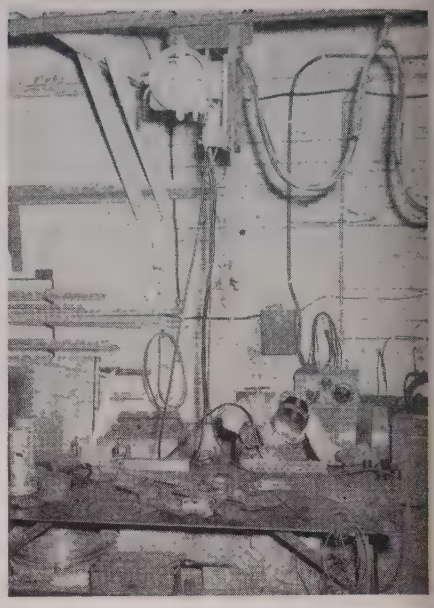


Tracked to the Job

Sigma welding equipment mounted high up out of the way on a track makes it possible to slide the welder from one part of the shop to another, working at several stations. This setup, developed for Linde Air Products Co.'s shielded arc process also reduces wear of the aragon and water hoses

element and the names of the elements are printed in large, bold type to provide a double check.

Designed for maximum visibility and ease of reading, the labels are made of special wear and scuff resistant paper.

Two Hammers Up Willys' Output

Two giant forge hammers, each having a hammer weight compared with that of a dozen automobiles, recently began operating at the Toledo, O., plant of Willys-Overland Motors Inc. New facilities will be used in jet airframe and engine component production.

Ward M. Canaday, Willys president, says the two hammers are part of an expansion program that will increase quantity and improve production versatility of the firm's 50-year old forge shop. Before the expansion program, this shop contained 26 hammers ranging from 2000 to 12,000 pounds capacity. Possible production reached 102 million pounds of forgings annually.

Involved in the expanded works are nine additional hammers ranging from 5000 to 35,000 pounds capacity. This, says Mr. Canaday,

EASY

TO READ

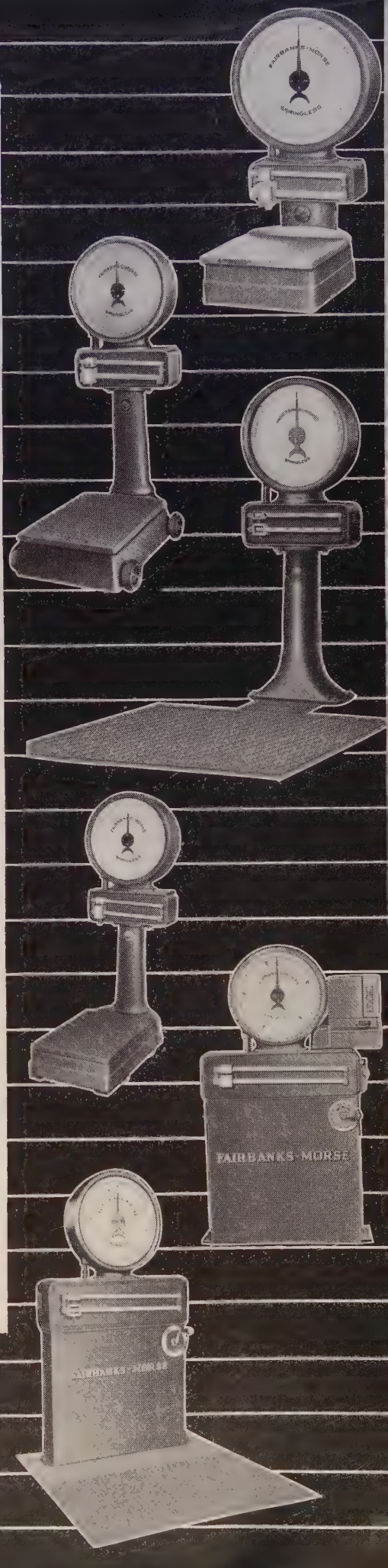
EASY TO OPERATE

And you get long, *accurate* service with these Fairbanks-Morse built-in advantages.

Fairbanks-Morse Dial Scales speed weighing because they're designed for easiest reading. The weighmen can read the correct weight at a glance. Even with drop weights applied, weights are still read right at the point of the indicator . . . no mental calculations are required. It's easier . . . faster . . . more accurate. Human errors are eliminated.

Check these features that mean fast, accurate weighing, with your Fairbanks-Morse weighing expert or write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

SCALES • DIESEL LOCOMOTIVES • ELECTRICAL MACHINERY



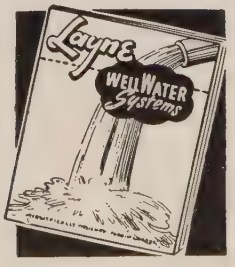
FAIRBANKS-MORSE

a name worth remembering when you want the best

SCALES • DIESEL LOCOMOTIVES • ELECTRICAL MACHINERY
PUMPS • HOME WATER SERVICE EQUIPMENT • RAIL CARS
FARM MACHINERY • MAGNETOS

TEST PUMPING

tells an interesting story



The outstanding features of Layne constructed wells and pumps are pictured and described in a catalog entitled "Layne Well Water Systems." A copy will be sent on request.

"Test Pumping"—is the trial run, shake-down cruise—or field maneuver of every well constructed by Layne. It is these tests that show what skill and experience have accomplished.

But long before the test pumping can be made, Layne has had to do a lot of planning, plotting and figuring out of such things as; kind of sand screen, size of drive shaft, type of bearings, number of pump stages and how much horsepower the motors should have to produce a promised amount of water against a certain pressure.

Once all of the above answers are on paper, they must be transmitted into an underground construction project—a task that requires more than ordinary skill and ability.

But wherever water is needed in quantity and at low cost, you may be sure that units installed by Layne will have unmatched efficiency, operate with utmost smoothness, be ever dependable and capable of lasting many, many years.

For further information on any phase of water development, address

LAYNE & BOWLER, INC.
General Offices, Memphis 8, Tenn.

Layne
WATER WELLS
VERTICAL TURBINE PUMPS
WATER TREATMENT

Navy Buffing Ideas

THE NAVY has its industrial side too. Besides sailing ships and fighting wars, Uncle Sam's sailors work in machine shops and metal working plants.

From their experience come the following recommendations for a good buffing and polishing compound.

It should stick to the face of the wheel only as long as it has good cutting qualities, no longer. Material should cover the face of the wheel so that all the work is done by the composition, not by the wheel.

It should remove all defects from the surface to be buffed. It should also clean up well on the work, and the cleaning material should be readily soluble in a suitable solution so that the final finish obtained by buffing is not spoiled by any subsequent cleaning and washing operations.

vill add more than 100 million ounds to annual production potenial. The two units already inalled have an official 35,000ound capacity rating. By lengthning shaft stroke, they are beefed up to a rating of 42,000 pounds.

Electron Microscope

Chrysler says the new tool opens research areas by 100,000-diameter magnification

FRUITS OF RESEARCH in some U. S. laboratories may be more ample as a result of a new tool available to scientists and engineers.

The tool, an electron microscope, s already displaying its possibilies in such different fields as netal microstructures, brake lining nd rubber compounds. Work with he instrument is progressing in Chrysler Corp.'s Engineering Divion laboratories, where Dr. Sumner B. Twiss, head of the physicalhemical research section, reports otential applications are almost ndless.

Microscope's magnifying power s more than 50 times that of the ght-using optical microscope. This remendous magnification makes it ossible to study details of metal icrostructure too minute to be

LEAKE *Created** Metal Stampings

*RESEARCH • DESIGN • ENGINEERING
PRODUCTION / DIE MAKING • COMPLETE PRESS ROOM • MACHINE SHOP
HEAT TREATING • ALL TYPES BRAZING AND WELDING
TESTING AND INSPECTION

PATENTED STAMPED ROCKER ARMS

More than twelve distinct types have been developed by the Leake organization, customer approved, and adopted for overhead valve engines (gasoline and diesel) in such applications as automotive, aircraft, agricultural, and industrial equipment.

28 PAGES..32 ILLUSTRATIONS

—*of creative metal stampings produced by modern Leake techniques. Single copies FREE when requested on your letterhead. Quantities at nominal cost.*

Look to LEAKE for *unusual* metal stampings

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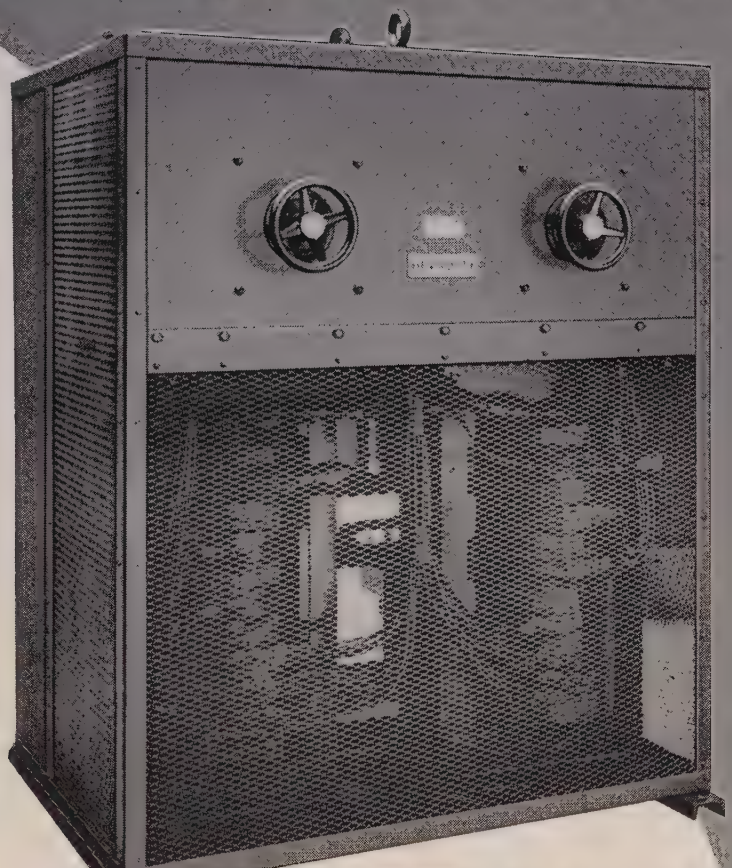
"dependable performance"



. . . specify

HEVI DUTY SPECIALTY TRANSFORMERS

The above Hevi Duty 100 KVA tap changing transformer provides 36 steps of output voltage control for regulating industrial equipment. The liberal design and careful construction of Hevi Duty specialty transformers assure years of quiet, dependable service. Sizes from ¼ to 1000 KVA.

Write for bulletin HD-499.

HEVI DUTY ELECTRIC COMPANY

HEAT TREATING FURNACES HEVI DUTY ELECTRIC EXCLUSIVELY

DRY TYPE TRANSFORMERS — CONSTANT CURRENT REGULATORS

MILWAUKEE 1, WISCONSIN

resolved with a microscope using visible light.

Specific Results—Chrysler engineers report specific results are evidenced in solution of problems in compounding rubber and in brake linings—details that had previously resisted intense research efforts. In the first phase of this work, tests of rubber shock absorber bushings revealed failures in one type, good service in others. No apparent reason was found for the difference.

The new microscope revealed that carbon black in all rubber compounds tested had large particles arranged in a network structure. However, the best compounds, says Dr. Twiss, contained also another type of carbon black consisting of very small particles. Examination of the inferior types revealed only the network containing large-size particles.

Brake Lining Research—Now an important tool in brake lining research at Chrysler, the electron unit has, for example, enabled labmen to see for the first time how asbestos fibers reinforce the lining material. It permits them to visualize mechanics of the braking operation as it involves the lining.

Microscopic studies, Dr. Twiss states, indicate the changes in lining structure before and after braking. This shows effect on the lining of heat developed in the braking action.

Dr. Twiss explains that the new microscope uses a beam of electrons generated by 50,000 v. These pass through a vacuum, whereas the conventional microscope employs a beam of visible light. The electron beam is controlled and focused by circular electromagnetic

Big Difference

IF YOU'RE looking for an example of how prices have changed over the years, here's one of many.

A New England machine tool manufacturer bought a planer in 1916 for $5500. They recently went about replacing this relic and found it cost $56,000 for a machine of comparable capacity. Naturally there was more machine in the new one, but how much more?

STANDARDS and SPECIALS by the Millions

THE FERRY CAP & SET SCREW CO.

2159 SCRANTON ROAD • • • CLEVELAND 13, OHIO

"SHINYHEADS"

America's Best Looking Cap Screw

Made of high carbon steel — AISI C-1038 — to standards for Full Finished hexagon head cap screws — bright finish. Heads machined top and bottom. Hexagon faces clean cut, smooth and true, mirror finish. Tensile strength 95,000-110,000 p.s.i. Carried in stock.

"HI-CARBS"

Heat Treated Black Satin Finish

Made of high carbon steel — AISI C-1038. Furnished with black satin finish due to double heat treatment. Hexagon heads die made, not machined. Points machine turned; flat and chamfered. Tensile strength 130,000-160,000 p.s.i. Carried in stock.

"LO-CARBS"

Made of AISI C-1018 steel — bright finish. For use where heat treatment is not required and where ordinary hexagon heads are satisfactory. Hexagon heads die made to size — not machined. Points machine turned. Tensile strength 75,000-95,000 p.s.i. Carried in stock.

SET SCREWS

Square head and headless — cup point. Case hardened. Expertly made by the pioneers in producing Cup Point Set Screws by the cold upset process. Cup points machine turned. Carried in stock.

FILLISTER CAP SCREWS

Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.

FLAT HEAD CAP SCREWS

Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.

"SHINYLAND" STUDS

All studs made steam-tight on tap end unless otherwise specified, with flat and chamfered machined point. Nut end, oval point. Land between threads shiny, bright, mirror finish. Carried in stock.

*

ADJUSTING SCREWS

Valve tappet adjusting screws — Hexagon head style — to blue print specifications — hexagon head hard; polished if specified — threads soft to close tolerance — points machine turned; flat and chamfered.

*

CONNECTING ROD BOLTS

Made of alloy steel — heat treated — threads rolled or cut — finished to extremely close thread and body tolerances — body ground where specified. Expertly made by the pioneers in producing connecting rod bolts by the cold upset process.

*

SPRING BOLTS

Case hardened to proper depth and ground to close tolerances. Thread end annealed. Supplied in various head shapes, with oil holes and grooves of different kinds, and flats accurately milled.

FERRY PATENTED ACORN NUTS

For ornamental purposes. Steel insert — steel covered. Finish: plain, zinc plated, cadmium plated. Size: 9/16", 3/4", 15/16" across the flats.

Tapped 1/4" to 3/4" inclusive. Cross section of Ferry patented acorn nut, showing how steel hexagon nut fits snugly into shell.

Pioneers and Recognized Specialists, Cold Upset Screw Products since 1907

STANDARDS carried by LEADING DISTRIBUTORS

* **SPECIALS** furnished to BLUE PRINT SPECIFICATIONS

WRITE FOR INFORMATION

SEND FOR SAMPLES

lenses instead of the optical lenses in the light microscope.

Excellent Depth of Focus—While light wave length limits the ordinary light microscope to a magnification of about 2000, the electron unit, Dr. Twiss points out, has a magnifying power of more than 100,000 diameters. Moreover, he says, it has excellent depth of focus, enough to insure clearly discerned depth and relative dimensions of objects and structures.

Because electrons are invisible, the final magnified picture appears on a fluorescent screen—much the same as with a television screen. Where photographs are necessary, a plate is inserted beneath the viewing screen. It responds to the electron beam as it would to light.

One Job at a Time

Special machinery built by Buhr Machine Tool Co., Ann Arbor, Mich., for manufacturing aircraft superchargers include a tool safety feature designed so No. 2 unit must complete a work cycle followed by one index before No. 3 unit can function. This control equipment also provides for a complete work cycle by both previous units before No. 4 can begin.

Machine consists of a main base to which are mounted four vertical hydraulic drill units, a single part holding fixture, a 36-inch diameter 10-station index table and a central coolant system.

Two complete revolutions of the index table are required to complete one part. All moving parts are lubricated automatically.

Substitute Is Promising

Use of low-grade domestic ores as source of manganese offers aid to metal makers

ELECTROLYTIC manganese from low-grade domestic ores can be substituted satisfactorily for some uses of ferromanganese made from high-grade foreign ores. So says a report from the Bureau of Mines, U. S. Department of the Interior.

Tests show that for some purposes electrolytic manganese is superior to other grades because of its high purity. In the tests 46 producers substituted electrolytic manganese produced at the bureau's experiment station at Boulder City, Nev., for their customary grades in the production of ferrous and nonferrous metals and alloys, and of welding rod coatings.

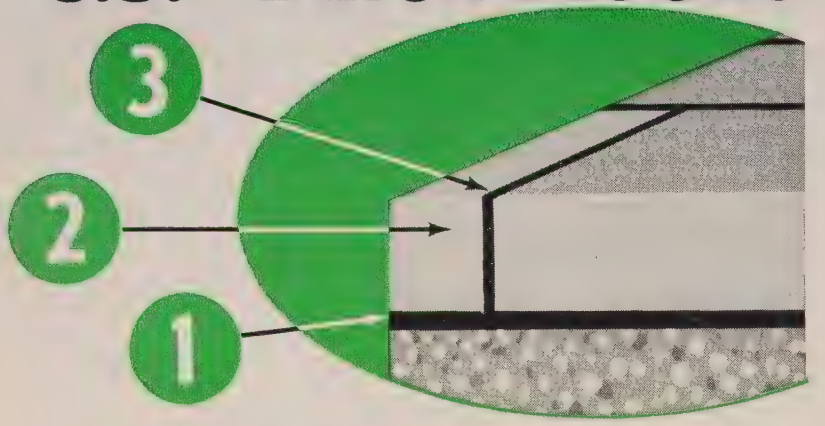
Cost Factor—Report says that only serious objection that can be raised against electrolytic manganese is its cost. Even if this were lowered enough to be competitive with present commercial grades it is questionable whether electrolytic manganese from domestic ores could supply more than a small part of the needs of American industry. Reason is the large volume of domestic ore that would have to be processed to supply a satisfactory feed for the electrolytic process.

Bureau's tests show that electrolytic manganese is desirable for stainless steels and welding rods because of its virtual freedom from phosphorus and carbon.

Where Used—Applications, says the bureau, would be in the manufacture of alloy saw, chisel and die steels by the basic electric process. Manganese recoveries in this case averaged 100 per cent.

Bureau says tests proved beyond question that electrolytic mangan-

Low Initial Cost — Negligible Maintenance
Protection Against *BOTH* Acids and Alkalies
in "U.S." BRICK FLOORS



A "U. S. Triple Construction" Corrosion Resistant Brick Floor provides complete protection against acid and alkali attack for practically an unlimited number of years — usually without maintenance expense of any kind.

First, an impermeable membrane of U. S. Stoneware's "RESILON" is applied over a 4" to 6" rigid sub-base. Chemically-resistant, nonporous, and flexible, Resilon protects the subfloor against acid seepage. Then split or full size "USSCO" Acid Brick (depending on the load) are buttered with "DURISITE" Cement and laid with joints $\frac{1}{16}$" to $\frac{1}{8}$" thick.

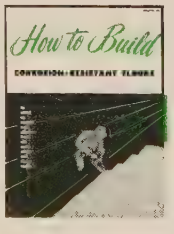
"USSCO" Acid Brick are dense, strong, resistant to erosion and spalling. Accurately shaped to lay tight and flat. "DURISITE" Cement sets quickly by chemical action — resists *both* acids and alkalies, as well as oils, greases, solvents and water. Completely nonporous, it bonds brick tightly with wafer-thin joints. Durisite is nontoxic, safe for workmen to use, and stable in storage.

YOUR OWN MASONS CAN LAY A "U.S. TRIPLE CONSTRUCTION" FLOOR

We will provide the materials for your own workmen to install a "U. S. Triple Construction" Floor, or if you prefer, we can handle the installation of the complete floor.

Write for this free book!

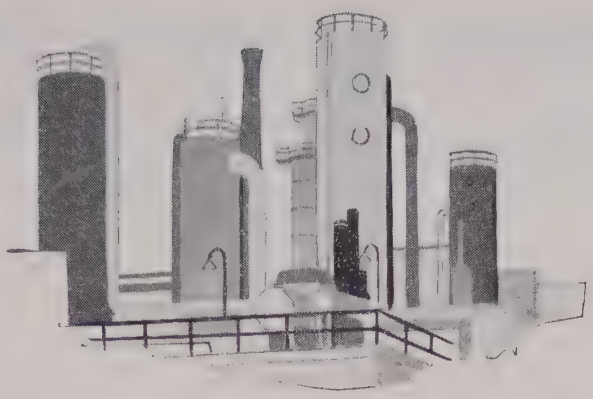
Detailed construction drawings showing approved methods of building floors, trenches, gutters, tank and motor supports, etc., with full technical data, photographs and case histories. Ask for Bulletin AB-17.



413C

U. S. STONEWARE
AKRON 9, OHIO

PROCESS EQUIPMENT DIVISION



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You can stop corrosion in its tracks . . . increase the working life of your hard-to-replace equipment . . . and reduce maintenance costs to a minimum when you protect with Pitt Chem Tar Base Coatings. In one large chemical plant, for example, ordinary paints failed in three months on an installation exposed to acid vapors and spillage. But Pitt Chem Coating 103 is still in excellent condition after 3½ years of service on the installation. Pitt Chem Coatings are easy to apply, economical to use and up to 10 times as thick as ordinary paints. What's more, you'll benefit by their peak quality because Pitt Chem Coatings are made by a *basic* producer and *quality-controlled* from coal to finished coating. ● *Write today for free booklet telling how Pitt Chem Tar Base Coatings can give you better corrosion control at lower cost.*

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A thin, high gloss maintenance coating for steel and concrete surfaces.

PITT CHEM 103
A heavy duty coating for metal exposed to corrosive vapors, dilute acids and alkalis.

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A fast drying, high gloss coating for equipment handling potable water.

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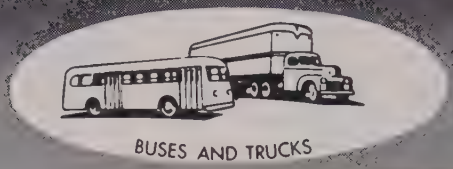
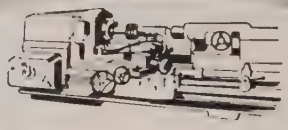
AND FLEXIBLE HOSE LINES



BUSES AND TRUCKS

RAILROADS

OIL FIELD DRILLING RIGS



MACHINE TOOLS

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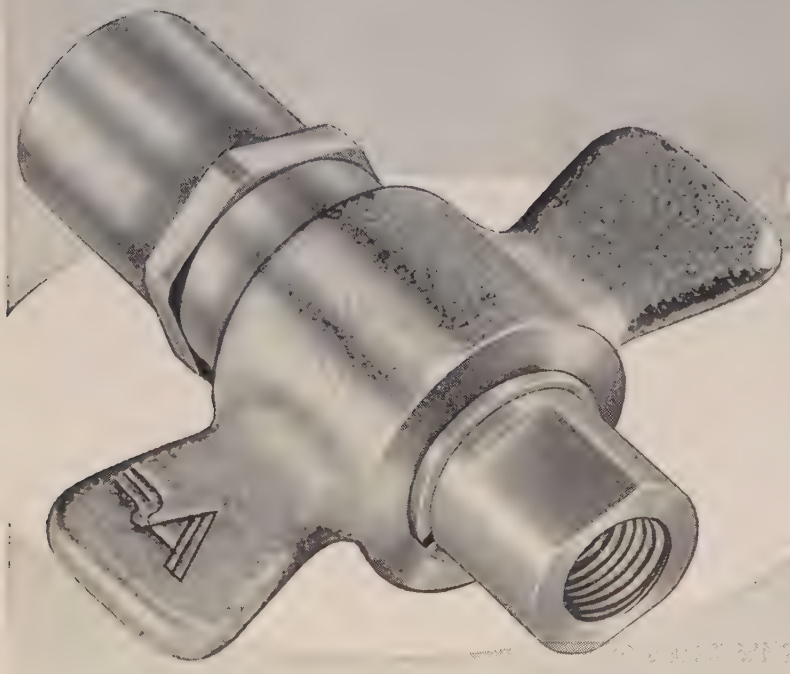
Speed Maintenance

WHEREVER FLUID-CARRYING LINES MUST BE DISCONNECTED AND RECONNECTED



Speed **maintenance,** ***speed*** **repair operations and** ***speed*** **interchanging of accessories joined by fluid-carrying lines with Aeroquip Self-Sealing Couplings. Lines may be separated in a few seconds without loss of fluid. No air enters the system upon reconnection. There is no need to drain or prime the fluid system. One Self-Sealing Coupling takes the place of two shut-off valves.**

Aeroquip

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AEROQUIP PRODUCTS ARE FULLY PROTECTED BY PATENTS IN U.S.A. AND ABROAD

— Plant Rehabilitation —

AFTER the U. S. Army drove back the enemy in Europe, a partly demolished small steel mill was ready to start operation. Then the question arose about what type of steel should be rolled. Answer came when they found an old book of American Society for Testing Materials standards. Before long long the mill was in production.

e can be added with equal or superior results to basic open-hearth eel if the manganese is added in e ladle. In the case of ingot on and extremely low-carbon eels, manganese recoveries are ratic owing to the high degree oxidation in the melt. With this ception recoveries of electrolytic anganese are at least equivalent those of ferromanganese.

conomy in Gear Making

One airless blasting machine, specially equipped, performs both cleaning and peening

IRLESS BLASTING for cleaning nd peening can effect important conomies in the manufacture of ears. This is especially true when ne standard airless blasting maine is specially equipped to do oth jobs. At Fairfield Mfg. Co., afayette, Ind., such an adaptaon was made on a table-type lasting machine.

Cleaning requirements at Fairld are two-fold: First, rough orgings are purchased from supliers in the "as forged" condion, then annealed in the manuacturer's plant. Scale from the orging and annealing operations is emoved in two standard tumblepe airless blasting machines ade by American Wheelabrator Equipment Corp., Mishawaka, nd.

Continuous Conveyor — Each ave a barrel capacity of 11½ cu t. Parts are tumbled by a conuous apron-type belt conveyor nder the blast of abrasive thrown rom a rotating, bladed wheel in ne roof of the machine. All parts re blasted so that a perfectly lean surface is provided for subseuent machining operations.

The other cleaning operation is

Do you pack and handle your product in crates?

Whatever you make, pack or handle, STANDARD CONVEYORS can speed operations

Material handling often constitutes as much as 50% of total production cost — cut handling costs and you cut production cost.

More than 45 years' experience qualifies Standard to be of expert service on any "package" conveyor need — roller, belt, slat, chain, push-bar, sectional, portable self-contained conveyor units — spiral chutes — pneumatic tube systems. Write —

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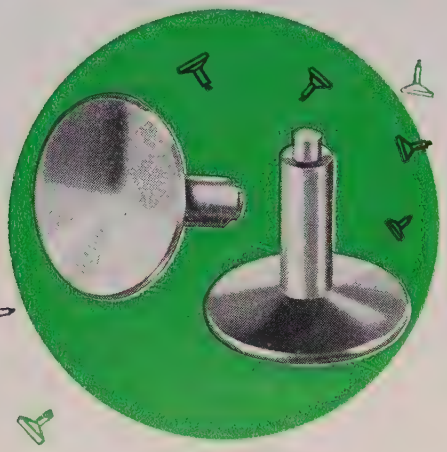
NO need to say—

"it can't be done"



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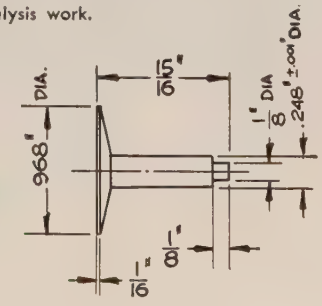
PURCHASING VALUE ANALYSIS

FOUND THE RIGHT SUPPLIER

AND SAVED $22,000 PER YEAR*

General Electric engineers are constantly seeking new methods and cost-reducing short-cuts to present ever-increasing values at lowest possible costs. This result is typical of their value-analysis work.



CAMCAR COLD HEADS THIS PART

Meets All Specifications for Tolerances, Structure and Design; Saves Manufacturing Costs Totalling $22,000 per Year.*

You, too, may feel you have a part which can't be cold-headed — but ask a Camcar specialist before you say No! As Specialists in Cold-Headed Parts supply, their skill often far exceeds what is expected. Through combined metal-flow-technology and special tooling abilities, they offer an exclusive source for high volume supply on complex, highly specialized, metal parts.

*General Electric Figures.

When you need fasteners or special metal parts . . .
TELEPHONE 5-9451 or TELETYPE RK 8653

CAMCAR SCREW & MFG. CO.

603 EIGHTEENTH AVENUE • ROCKFORD, ILLINOIS

"PRODUCTION-DESIGNED FOR YOUR ASSEMBLY LINE"

removal of heat treat scale from the multitude of sizes and shapes of gears produced. For this purpose, a multi-table type machine with eight 28-inch diameter work tables mounted on a spider is used. These tables rotate individually under the blast of metallic abrasive thrown from an airless wheel in the roof of the cabinet. This machine replaced manual cleaning in an airblast room and cut cleaning time in this operation to one-third of what it was originally.

Shot Peening Too—Table also is equipped with facilities for shot peening to increase the fatigue life of the gears. When this machine was purchased, Fairfield reports its engineers investigated the possibility of a single machine suitable for both cleaning and shot peening.

They equipped the standard multi-table with special features, such as a closed air cycle separator to remove worn shot too small to be useful and a shot adding mechanism which automatically replaces the worn shot removed. This made it suitable for peening ring gears in the horizontal position. For worm, spur, and helical gears, a special traveling carriage consisting of an arbor spinner fixture was added to the machine.

These gears to be peened are placed on the carriage, which then travels into the blast zone. At the end of a predetermined time in the blast, the car returns automatically to the work station. Maximum diameter gear that can be handled with the special attachment is 15 inches. Larger gears can be peened by being placed on the standard work tables of the machine.

Press Pierces 20mm Shells

Development of a horizontal piercing press designed specifically for piercing the flash hole on brass or steel 20mm cartridge cases is announced by E. W. Bliss Co., Canton, O. The 5-ton capacity tool pierces case hole per stroke and operates at a rate of 60 strokes per minute.

Press is equipped with a hand filled chute feed with three stations. First is a detector to check position of case in the chute; second is the work station; third, a detector to check correct spacing

Progress in Steel . . . *Means More Sheet and Strip*

The huge steel skeleton above is the beginning of one of several structures being built to house the new 66-inch Sheet-Strip Mills at the Pittsburgh Steel Company's Allenport Works. From these mills will come hot and cold rolled sheets to supply this vital material to manufacturers of a multitude of defense items and civilian goods.

The construction of these new mills is an important part of Pittsburgh Steel's Program of Progress which has as its objectives increases of 82% in finished product capacity and 50% in ingot capacity. It includes the acquisition of the Thomas Steel Company, now operating as the Thomas Strip Division, the installation of the new 66-inch High Lift Blooming-Slabbing Mill, which will roll slabs for the new Sheet-Strip Mill. Blast Furnace and Open Hearth capacities are also being greatly increased. All this is being done to expand production and diversify the Company's line of wire, tubular and flat-rolled products in order to serve customers better.

This Program of Progress at Pittsburgh Steel Company is typical of the activity in the steel industry which daily grows larger and stronger in order to help keep this Nation's commanding position in the world. For it is only with an adequate supply of steel that we can defend ourselves from aggression—maintain a high level of civilian economy as well.

Pittsburgh Steel Company

Pittsburgh, Pennsylvania

First and third stations have solenoid switches to stop the press if a case is loaded improperly or if the hole is not pierced.

RTMA Cites Material Savings

Conservation techniques instituted by the radio-television industry have resulted in substantial savings of critical materials—but without reducing quality, life or reliability of products.

This is the report made by Radio-Television Manufacturers Association, which expects "even greater savings when long-range conservation design changes are made effective in production." The report was submitted by Lewis M. Clement, Crosley Division, Avco Mfg. Co., who is chairman of RTMA's advisory council, material bureau.

With the possible exception of nickel, the council believes its material situation has improved — and will continue to do so. With respect to nickel, Mr. Clements points out that the tube industry has made great strides in reducing its use. The chairman cites figures that indicate tubes today, in most instances, use less than 50 per cent of the nickel required before 1950.

Other conservation techniques noted include application of the electrostatically - focused picture tube. The council finds this tube has reached general use and will probably replace the electromagnetically focused unit soon. Copperweld wire has replaced copper wire for hookup purposes in many receivers. Increased supply of selenium means transformerless types of sets are being used more generally.

Drive Maintenance Outlined

Damage to belt, chain and gear drives is usually caused by lack of a simple but systematic preventive maintenance program. This is pointed out in a technical leaflet, published by Small Defense Plant Corp., which recommends a few minutes of checking daily to avoid much repair, downtime and expense. The leaflet outlines methods of checking to assure proper maintenance and care of v-belts, flat belts, chain and gear drives.

Another leaflet, prepared jointly by SPDA and Bureau of Labor Standards' safety engineering staff, suggests means of reducing accident costs in small industrial plants. Emphasized in the work on safety is the fact that about 70 per cent of all U. S. industrial accidents occur in plants operated by small businesses.

Improved Capacitors Announced

One of the most important components in electrical equipment manufacture is the electrolytic-type capacitor. As currently made, this item consists of a chemically formed gas layer between long, coiled strips of aluminum foil.

However, investigation continues to develop a better product. Office of Technical Services, Washington, reports work done for the Army Signal Corps has resulted in capacitors that are smaller and that do not break down at low temperatures. In developing this type, scientists used a different

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York-Gillespie Manufacturing Company — designers and custom-builders of special machinery — and York Engineering and Construction Company form an unbeatable team working to develop and build machinery to fit your production requirements.
From Your Own Blueprint or Our Design
Special machinery is created in our shops from your own design . . . or we will design and fabricate to solve your specific problem.
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FLANGED AND DISHED HEADS

Fabricated in carbon steel or Stainless-Clad. In sizes from 9″ to 19′ overall diameter ... 3/16″ to 6″ thickness.

ALLOY AND CARBON STEEL PLATES

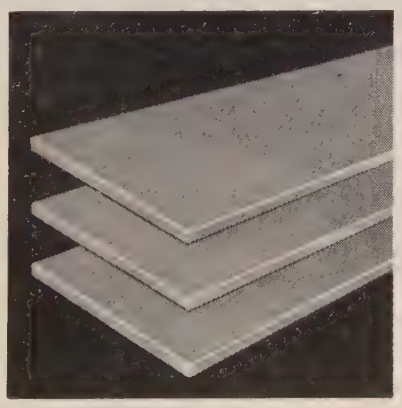
Up to 150″ wide. Quality-controlled through every stage of processing starting with the open hearth.

STAINLESS-CLAD STEEL PLATES

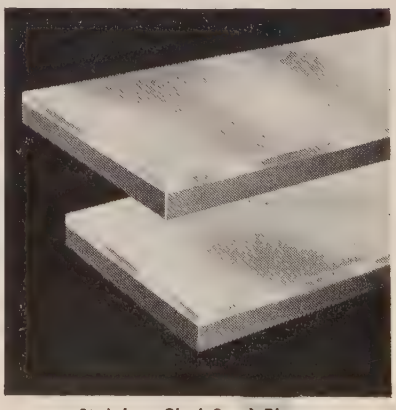
A composite plate of carbon steel and stainless steel inseparably bonded together. Produced and rolled under specialized supervision to insure absolute uniformity of the finished plate.

For additional information, write to Wickwire Spencer Steel Division, Claymont Plant, Claymont, Delaware.

Flanged and Dished Heads



Alloy and Carbon Steel Plates



Stainless-Clad Steel Plates

CLAYMONT PRODUCTS

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

Use ARCOS Low Hydrogen Electrodes

ARCOS GRADE	A.W.S. SPEC.
Tensilend 70	E7016
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Manganend 1M	E9016
Manganend 2M	E10016
Nickend 2	E8015
Chromend 1M	E8015
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With Arcos Low Hydrogen Electrodes you can produce sound weld metal without the need for preheat or post heat frequently required with mild steel electrodes. Correct selection and blending of coating ingredients, and controlled-cycle, high temperature baking produce a moisture-controlled coating that safely minimizes the gases released in welding.

The moisture-proof wrapping on every 5 and 10 lb. package in a box of electrodes prevents moisture pick-up in shipment and storage.

Added together, these Arcos "quality controls" assure you consistently sound weld metal on every high tensile steel application. ARCOS CORPORATION • 1500 South 50th St., Philadelphia 43, Pa.

WELD WITH

ARCOS

Specialists in Stainless, Low Hydrogen and Non-Ferrous Electrodes

chemical, with a metal foil of tantalum instead of aluminum.

Key to successful manufacture of tantalum capacitors is economical production of extremely thin tantalum foil. The government report describes two methods for thin foil manufacture: Rolling and vapor deposition, discussing production techniques and costs for both.

Ash Deposits Controlled

Additives modify fuel oil residue, easing cleaning and cutting boiler downtime

TROUBLESOME DEPOSITS on boiler tubes from the firing of residual fuel oil can be relieved through use of an oil additive. Babcock & Wilcox Co., New York, manufacturer responsible for extensive development work on this project, reports its process has proved successful through both laboratory and field operations.

Certain grades of oil are recognized as containing ash that results in depositing on boiler heat transfer surfaces a hard residue not readily removable by air or water lancing. Deposits are particularly bothersome on superheater tubes, where frequent interruptions in operation are required for thorough cleaning.

Controlling Characteristics — This situation is aggravated by the recent trend toward larger boilers with higher steam temperatures. Because an ash-free fuel oil of this grade is impractical, the firm attacked its problem from the angle of controlling ash deposit characteristics. Company investigators decided that modification of the deposits to make them more readily removable was the best approach.

Superheater deposit was found to be characterized by low melting constituents. Lab work sought selected materials that would raise its melting point when mixed intimately with the oil ash. This meant heating surface deposits would be dry and more readily removable by customary means.

Pilot Operation First—Next, a pilot furnace was set up to test promising additives under simulated operating conditions. Equipment, built at B & W's research

One for Ten

EQUIVALENT of ten 1000-watt incandescent lamps. That's what Westinghouse Electric Co. says about its new 1000-watt flourescent mercury lamp.

They figure it this way. The lamp puts out two and one half times as much light as a standard 1000-watt incandescent lamp. In addition the fluorescent lamp lasts four times as long.

Savings in less frequent replacement plus amount of light per watt makes them a good investment.

center, consisted essentially of a small furnace in which the fuel-additive mixture was burned; and a series of three air-cooled coils upon which combustion products' deposits were collected. Coils were placed at different levels in the stack to study effect of various temperature zones on deposit formation on the cooled metal tubes.

Additives in the form of finely divided materials suspended in the fuel and metallic organic compounds of the soap type were tried in the pilot-plant tests in various weight ratios to the ash in the oil. Among additives employed, alumina, magnesium oxide and calcium oxide displayed the most promise. These produced a powdery deposit easily removable from the coils. This contrasted with the hard, glassy, fused material formed when additives were not used.

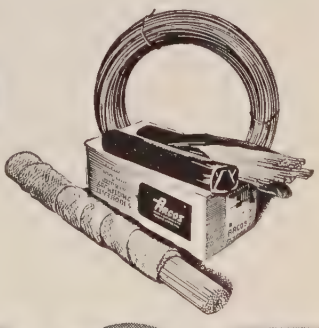
Actual Operation Next—To test additives' effect on a commercial-size unit under actual operating conditions, B & W extended its work to the Inglis station of Florida Power Corp. The unit at Inglis is an FH boiler having a capacity of 300,000 pounds per hour steam at 900 psi and 910° F total steam temperature, equipped with an inverted loop superheater. It carries almost a constant 24-hour load of 275,000 pounds per hour.

This boiler has operated since 1947, normally being removed from service twice a year for cleaning. During operating periods, in addition to the use of sootblowers every eight hours, it was necessary to water-lance the superheater and air-lance and wash the airheater. To do this, a cleaning gang was

Use ARCOS Stainless Electrodes

Because Arcos applies a series of mechanical performance tests for strength, toughness, and ductility to all types of Stainless weld metal, you can be sure that your deposits with Arcos Stainless Electrodes will be physically "right". Whatever the job requirement—ability to withstand heavy loads, high pressures, or severe shocks—you'll get the results you want.

Other Arcos "quality controls" assure that the weld metal will be chemically and metallurgically "right" as well. That's why it will pay you to depend on Arcos Stainless Electrodes for the correct combination of properties that lead to sound welds on every job. ARCOS CORPORATION • 1500 South 50th St., Philadelphia 43, Penna.



WELD WITH ARCOS

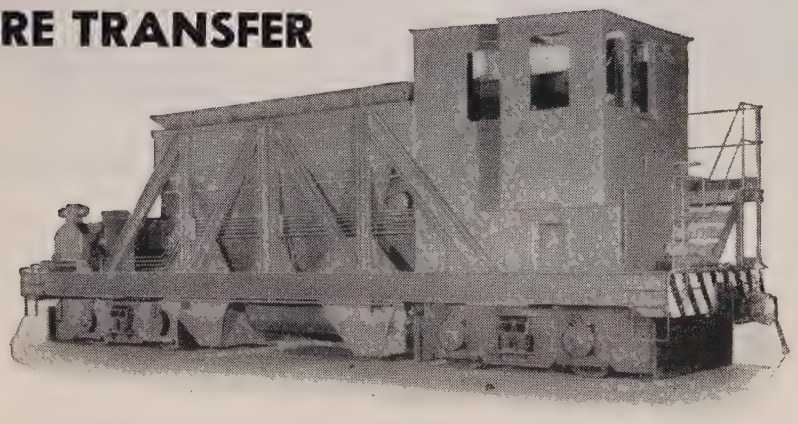
Specialists in Stainless, Low Hydrogen and Non-Ferrous Electrodes

DEPENDABILITY TO SATISFY RECORD DEMANDS

ATLAS CARS

Atlas Cars for steel plants are known to have that extra work factor which is so important in these days of high production.

50-TON BOTTOM DUMP ORE TRANSFER



This 50-ton ore transfer is a modern air-operated car with a heavy slab truck to protect motors and brakes when plowing through ore piles. For added safety a folding car pusher arm is used and is provided with a safety latch which cannot be lowered unless the switchman holds the latch. The overhung cab allows a clear line of vision for the operator.

Special features include electric hopper heaters, centralized lubricating, roller journal bearings, air brakes and, of course, all necessary safety features.

Custom Builder of Steel Plant Cars

THE ATLAS CAR & MFG. CO.

ENGINEERS MANUFACTURERS

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employed three or four nights a week. Semi-yearly shutdown periods always lasted several days before a thorough job could be done.

Alumina Satisfactory — Results of the alumina tests under actual operating conditions verified B & W's findings. Deposits in the superheater region were changed from a dense, hard slag to a relatively soft ash. This composition indicated that it would be possible to keep the unit on the line indefinitely if furnace walls, screen and superheater tubes were lanced with air at about 225 psi once a week. Cost of the additive was about $1 per hour, or $750 per month.

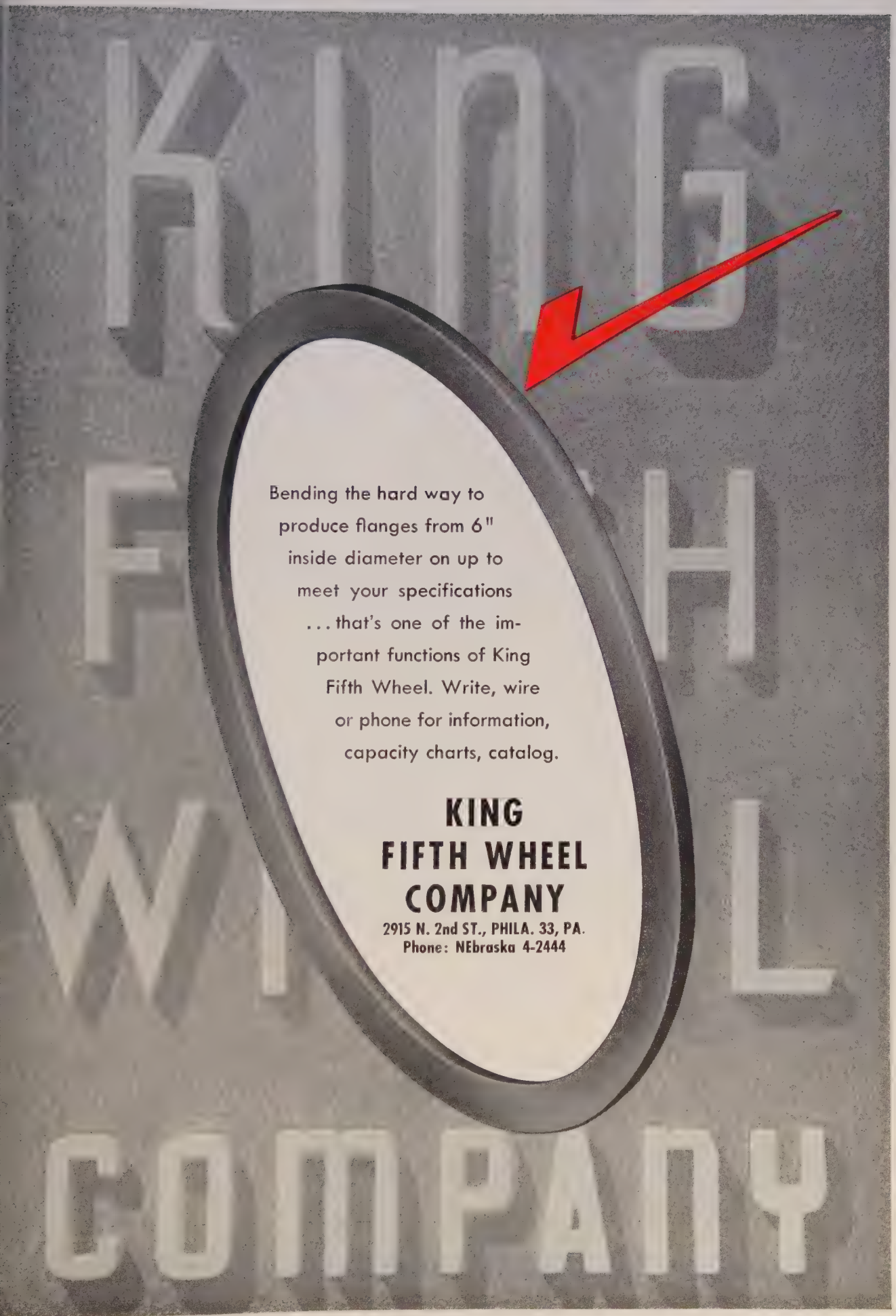
Following its success with alumina, B & W initiated a program using dolomite as the additive. The material is available locally at Inglis for $12 per ton, or 18 cents per hour or $130 per month. This calcium-magnesium carbonate is available in the form used from calcining kiln stack gases. Its fineness is 100 per cent through 325 mesh screen.

Dolomite Considered Comparable — Results showed the dolomite comparable with alumina. With the dolomite, however, more fine powdery material was deposited in the first pass of the superheater. That section extending into the second gas pass was clean after a two-month operating period. The third pass, consisting only of saturated surface, was also clean.

Experience at Inglis shows that wear rate of sprayer plates continues strong. However, B & W reports that at another plant, wear rate has been slight when dolomite is used.

From an ash standpoint, says B & W, there is every indication that the unit can be kept clean for an indefinite period with use of a 200 psi air lance every 5 to 7 days. In this phase, it is necessary to provide lance doors so all rows of tubes are accessible. Essential also is location of the air jet discharge close to the ash being removed.

Fringe Benefit—According to B & W, results indicate another significant benefit in addition to raising ash fusing temperatures. This factor lies in lowering dew point of flue gases. Although the effect of dolomite on airheater corrosion is not known fully, the major constitu-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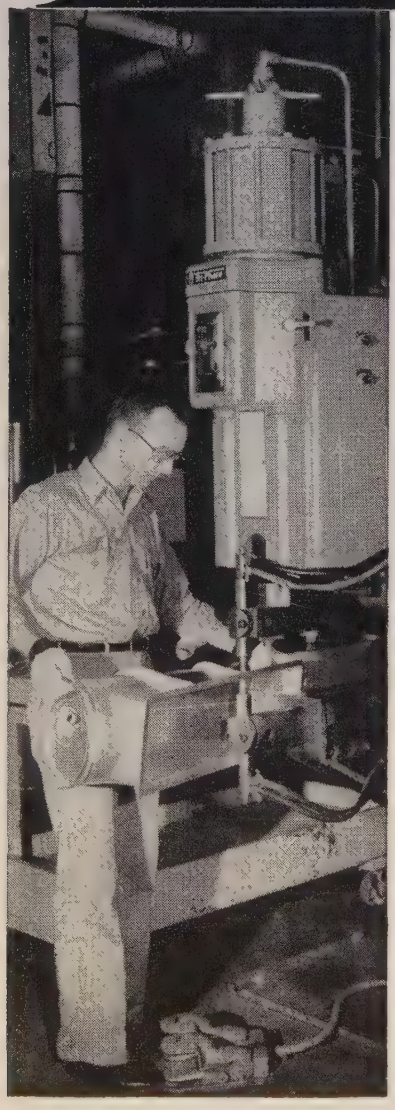

Specifications Mil-W-6860 and 6858 (formerly AN-W-30 and 32) and Taylor-Winfield resistance welding equipment have been partners for years. From Taylor-Winfield you can have the efficient Tri-Phase DC or Single Phase Spot and Seam AC welders in many sizes and styles. From Taylor-Winfield you can obtain all the engineering data or field assistance you need to meet your problem, and the welders to do the job. Let T-W know your requirements. Write, wire or phone.

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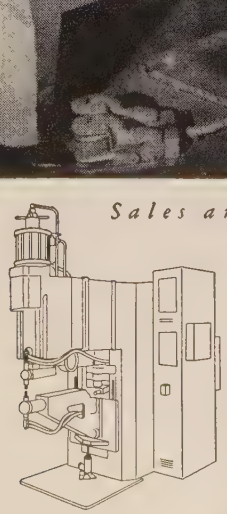

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ent of the additive ash is $CaSo_4$. It should mean that a smaller amount of free SO_3 is present in gases passing through the airheater.

The company considers procedure and equipment worked out with Florida Power Co. a good example of a typical operation. In this installation, additive is mixed batch-wise, in heated fuel oil that is kept agitated. This is fed in measured quantities to the fuel oil ahead of the burner.

Proper Procedure—Motor driven stirrer maintains constant agitation and reciprocating pump, adjusted to a feed rate of 50 gph, pumps the slurry into the oil line on the downstream side of the burner control and regulating valves. This proportion works out to about 0.1 per cent of dolomite in the fuel.

Mixing tee in the main oil stream's additive loop intensifies mixing action. In the piping arrangement, fresh oil meets the slurry, then both streams make several 90-degree turns before reaching the burners. Distribution of additive to each burner position serves as a check on quality of mixing accomplished. Samples of treated oil are taken from each burner line for analysis of additive content.

PEI Advances Forum Program

Agenda aimed to interest the practical porcelain enameler, is announced for the 1952 Shop Practice forum of Porcelain Enamel Institute. This year's three-day session will be held at University of Illinois, in co-operation with the university's department of ceramic engineering. Dates are Sept. 10-12.

Opening day feature will be an entire session devoted to developments in topics of general industry interest. Such phases as "One Coat Whites Directly on Steel," "Fluorescent Enamels," "Stable Colors in Titania Opacified Enamels," and "Low Temperature Enamels" are among subjects that will be discussed.

Second day will bring the subject "Enameling of Aluminum" into discussion in all its aspects. Representatives of plants doing actual work in aluminum enameling will present reports on actual experiences. Other second-day papers

Little fists with a king-size grip

Castings for pressure hose connectors

RADIOGRAPHY proves them sound

The grip that these little metal fists get must not only hold fast but be pressure-tight. They're hose connectors with a vital job to do. Any possible cause for failure must be discovered—and before expensive machine time is wasted.

So the manufacturer radiographs each casting. It's a routine which more and more foundrymen find pays off. It provides assurance that only sound work leaves the shop—builds a reputation for good work. And besides it often indicates ways production runs can be adjusted to give greater yield.

Wouldn't you like to know how radiography can help you in your operations? Your x-ray dealer will be glad to discuss it with you. Or, if you wish, we'll send you a free copy of our booklet "Radiography As a Foundry Tool."

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X-ray Division, Rochester 4, New York

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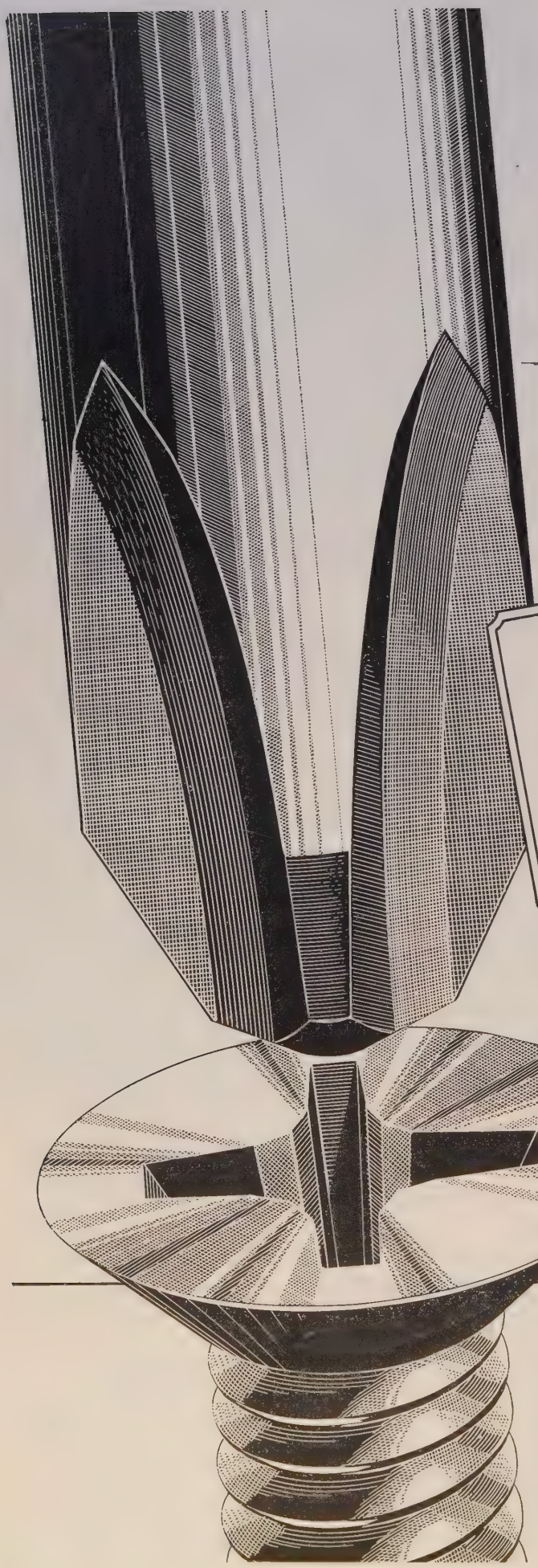
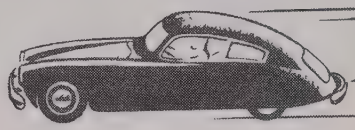
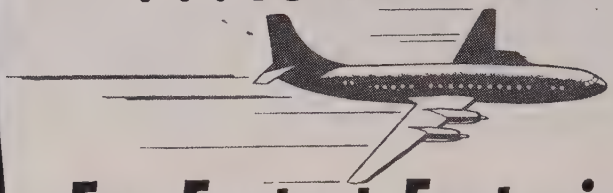


From Automobiles



. . . to aircraft



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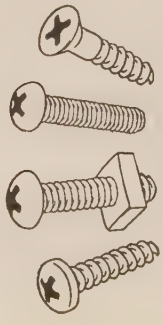

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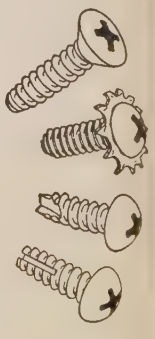

include "Properties of Steel for Enameling."

Afternoon session the second day, will consider the growing importance of high temperature ceramic coatings. Representatives of the armed forces will discuss needs for ceramic coatings by the military. Possible post-war industrial implications will be considered.

Also planned for this session is discussion of new uses for porcelain enamel and consideration of the work being done in development of alkali-resistant porcelain enamels. On the third day, company representatives will discuss control practices in common usage throughout the industry.

Heavy Car Speeds Shipping

HEAVY-DUTY RAILROAD CAR, designed to carry giant electric generators that concentrate great weight in short spaces, is simplifying shipping problems for Westinghouse Electric Corp.

E. H. Baird, superintendent of shipping for E. Pittsburgh divisions, says the flat car is about the same length as an average box car. It already has been used to ship a 163-ton stator—the stationary part of a turbine generator—to the Elrama, Pa., power station of Duquesne Light Co. This shipment did not approach the 493,000-pound load limit.

Extra-Heavy Journals—Entirely owned by Westinghouse, the car is equipped with extra heavy journals so it can easily carry all but the largest generators as completely assembled units. It has 16 wheels distributed among four trucks. A regular car has eight on two trucks. Total weight is 106,000 pounds.

Because of its high capacity, the unit is much heavier than a normal car when loaded. This means special precautions must be taken so that it is not routed over roadbeds that might be damaged by the weight.

Time Saver—By using this car, Mr. Baird says, the firm will be able to ship most of its extremely heavy units completely assembled. Before, it was necessary to disassemble them for shipment. Shipping complete units will result in a saving of time and effort both at E. Pittsburgh where the generators are assembled and at the power house where the unit is to be installed.

Westinghouse is erecting a complete new production aisle at E. Pittsburgh to build larger generators.

Motor Fuel Storage Studied

Data useful in overcoming corrosion and other difficulties in the handling and storage of motor fuels are presented in a government research report announced by Office of Technical Services.

Motor fuels when exposed to air pick up a small amount of moisture. When the fuel is cooled this moisture settles out as water droplets that cause corrosion and other troubles in fuel handling and storage. Scientists at the Naval Research Laboratory investigated how motor fuels absorb water from the air, and found that the fuel and moist air exchange water readily until an equilibrium water content is reached. This depends on solubility of water in the fuel and relative humidity of the air.

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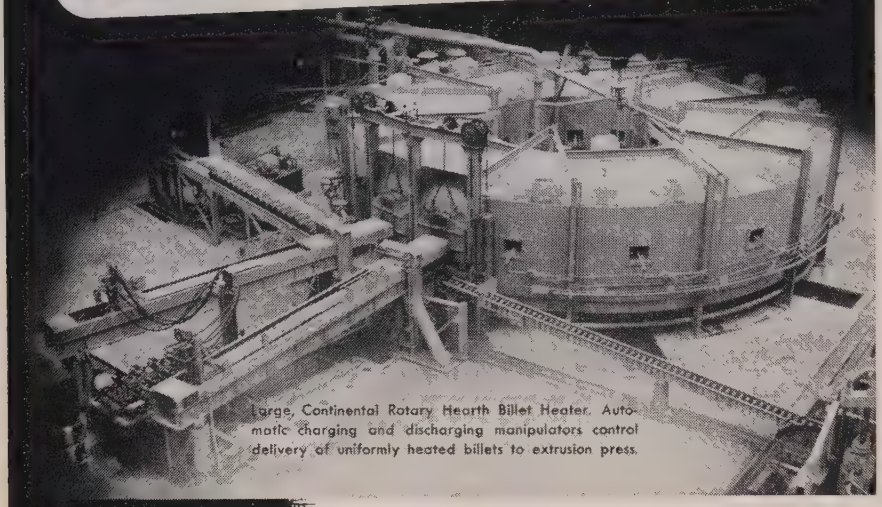

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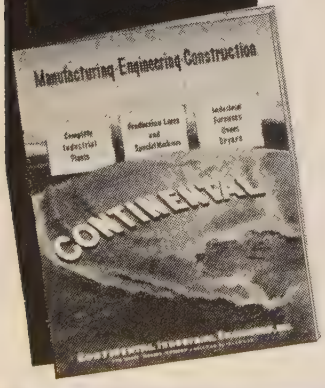

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Whatever your heat process problems in plant conversion for military production, CONTINENTAL has the answer.

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A new technique for measuring small quantities of water dissolved in motor fuels, which was developed during the investigation, is also described in the report.

Protects Iron and Steel

AFTER two years of extensive testing, an entirely new method of cold galvanizing for surface protection of steel and iron has been announced by H. L. Grebinar, Galvanite Corp., New York. The process involves a compound called Galvanite, which can be applied with any ordinary paint brush, electric spray gun or by cold dip. Special equipment or personnel training is unnecessary.

Used on Any Metal—The new process gives effective results on any structure from an iron or steel bridge to a rusted garden gate. Marine users have found that when applied directly to a ship's hull, the coating will prevent sea growth, corrosion, and electrolysis.

Iron or steel surfaces coated with the compound create an electro-chemical union, thereby uniting the zinc with the base metal's surface.

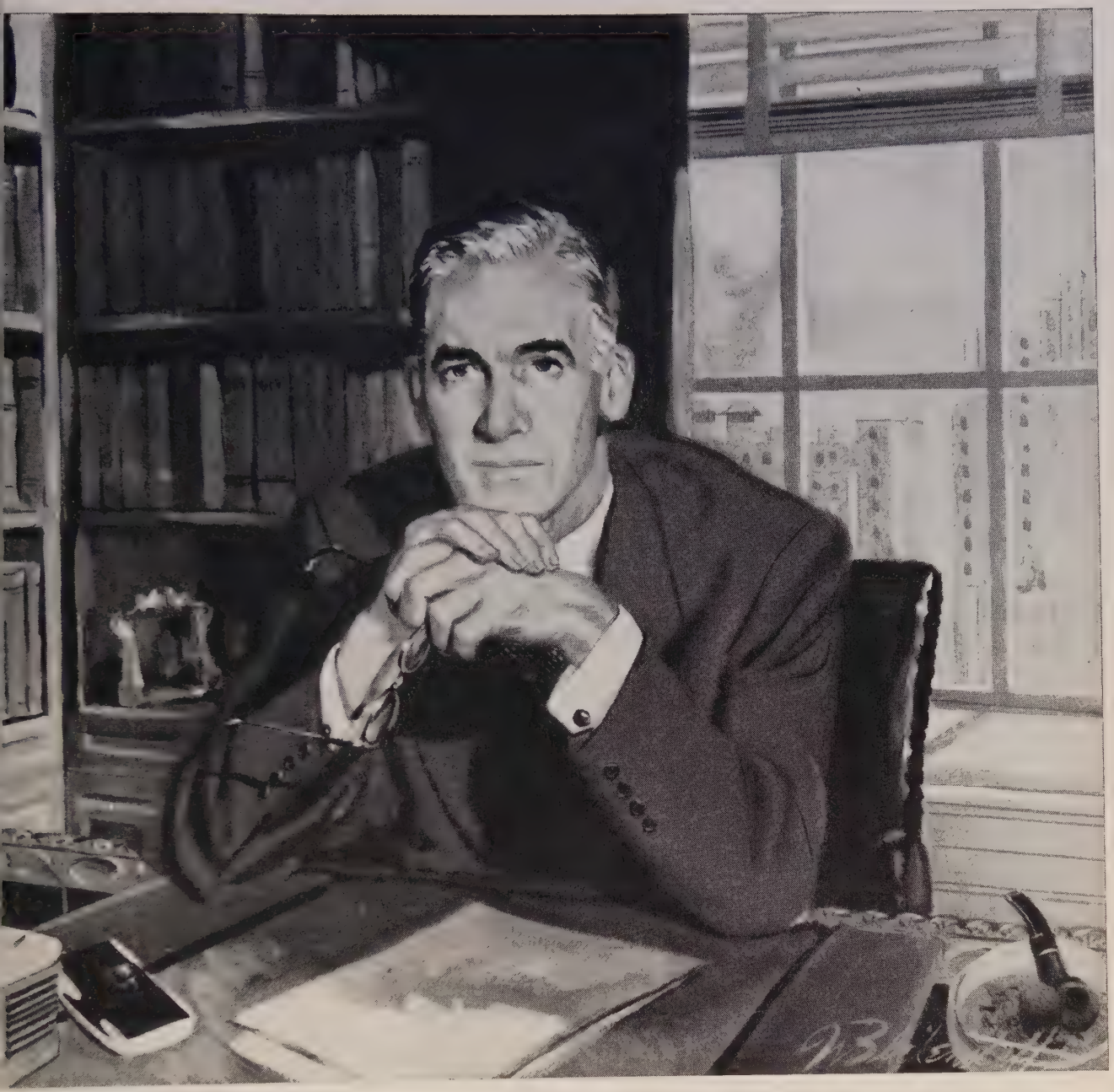
Coating differs basically from other so-called metallic paints containing zinc, in that it actually combines with the base metal, setting up electrical continuity. It offers true cathodic protection. It leaves a coating of 96 parts, by weight, of chemically pure zinc.

Stops Creeping Rust—In instances where the coating is directly applied onto adhering rust, it induces the rusted area to create its

Nautical Comfort

S. S. UNITED STATES, the United States Lines' new ship which recently chopped about 10 hours off the Atlantic crossing record, is air conditioned throughout all passenger and crew accommodations right down to the 20 individual dog kennels. York Corp. handled the installation.

Air is compressed by the 60-odd turbo Freon compressors and discharged into the rooms through the light fixtures. Ship's stores are kept at below zero by 12 additional high-speed compressors.



plenty of reason to set you dreaming

This is a time for planning, by business men of vision. The day must come when allocations and priorities will be words of the past . . . when materials will be much easier to get and orders perhaps much harder. Against that day, let some of your dreaming center on stainless steel, the most uniquely useful metal in the book—hard, strong, beautiful, everlasting.

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You're looking at a polished section cut from a Duraspun Centrifugal Casting...a casting with 12-14% chromium. It tells better than words of the high quality of Duraspun Centrifugal Castings.

You get a fine, dense, uniform grain structure. Possible air pockets and blow holes are eliminated. Tensile strength is higher than with static castings.

Order Duraspun if you need pipe or tubing. Sizes run up to 15 feet in length; up to 32 inches OD; and down to ¼ inch wall thickness. Odd shaped pieces can be produced providing a circular hole passes uniformly down the center. These, of course, require specially designed casting forms.

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own non-flaking coating, thereby stopping any further rust and preventing "rust creep."

One of the tests made, was on bright and rusty steel and submerged in salt water for 2 years. Scratch tests showed both samples to be free of any loose rust after their long immersion period.

The coating also eliminates the costly time-consuming and often impractical necessity of dismantling required by other zinc galvanizers. It can be applied directly to the object, regardless of size. A single coating of brushing consistency, will give a coverage of approximately 625 square feet per gallon.

Within 40 minutes after application, the coating is tackfree; completely dry for use, within 48 hours.

NACE Plans Southern Session

Design against corrosion and engineering approaches to solving corrosion problems will be principal objects of the technical program planned by National Association of Corrosion Engineers for the South-Central region at New Orleans, Oct. 1-3.

One feature will be presentation of a technical practices committee report on corrosion of oil and gas well equipment. Another will consist of four discussions of corrosion work done by other petroleum industry associations.

Extractor Works in Blind Holes

Trouble of pulling bushings and bearings from blind holes is lessened with the new extractor made by Crozier Machine Tool Co., Hawthorne, Calif.

Secret of device is the expanding arbor. When inserted in the hole it expands to grab and pull out bearing or bushing.

Koping Millers Introduced

Line of Swedish milling machines is being introduced by American Pullmax Co. Inc., Chicago, for U. S. distribution. The Koping Co machines are available in both horizontal and vertical types.

Complete versatility is made possible through a broad group of accessories and adjustment controls built to fit the tools for both toolroom and production work.

CALENDAR OF MEETINGS

ugust 11-13, Society of Automotive Engineers: National West Coast meeting, Fairmont Hotel, San Francisco. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

ugust 19-22, American Institute of Electrical Engineers: Pacific general meeting, Phoenix, Ariz. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.

ptember 3-13, Centennial of Engineering, Convocation Period: General manager, F. W. Edwards. Address: 57th St. & S. Shore Drive, Chicago 37.

ptember 4-6, American Institute of Chemical Engineers: Palmer House, Chicago. Institute address: 120 E. 41st St., New York 17. Secretary: Stephen L. Tyler.

ptember 8-10, American Standards Association: National standardization conference, Museum of Science & Industry, Chicago. Association address: 70 E. 45th St., New York 17. Secretary: G. F. Hussey Jr.

eptember 8-12, Instrument Society of America: Annual fall meeting and exhibit, Public Auditorium & Hotel Cleveland, Cleveland. Society address: 921 Ridge Ave., Pittsburgh 12. Secretary: Richard Rimbach.

eptember 9-11, Society of Automotive Engineers: National tractor meeting, Hotel Schroeder, Milwaukee. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

eptember 9-13, American Chemical Society, Chicago Section: National chemical exposition, Chicago Coliseum, Chicago. Address: 86 E. Randolph St., Chicago 1.

eptember 11, American Iron & Steel Institute: Regional technical meeting, Palmer House, Chicago. Institute address: 350 Fifth Ave., New York 1. Meeting director: Frank Ragland.

September 14-17, National Automatic Merchandising Association: Annual meeting and exhibit, Palmer House, Chicago. Association address: 7 S. Dearborn St., Chicago. Secretary: C. S. Darling.

September 14-19, American Chemical Society: Fall meeting, Atlantic City, N. J. Society address: 1155 16th St. NW, Washington. Executive secretary: Alden H. Emery.

September 14-20, Concrete Reinforcing Steel Institute: Semi-annual fall meeting, The Broadmoor, Colorado Springs, Colo. Institute address: 38 S. Dearborn St., Chicago 3. Secretary: H. C. Delzell.

September 15-17, Allied Railway Supply Association: Annual meeting, Hotel Sherman, Chicago. Association address: 109 N. Wabash Ave., Chicago 2. Secretary: Charles F. Weil.

September 22-23, Steel Founders' Society of America: Fall meeting, The Homestead, Hot Springs, Va. Society address: 920 Midland Bldg., Cleveland 15. Secretary: F. Kermit Donaldson.

September 22-24, National Truck Body Manufacturers Association: Annual meeting, Muehlebach Hotel, Kansas City, Mo. Association address: DuPont Circle Bldg., Washington. Secretary: Shipley D. Burton.

September 22-25, American Mining Congress: Metal & nonmetallic mineral mining conference, Denver. Congress address: 1102 Ring Bldg., Washington 6. Secretary: Julian Conover.

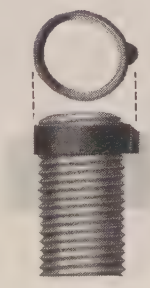
September 29-30, American Machine Tool Distributors Association: Annual meeting, The Cavalier, Virginia Beach, Va. Association address: 1900 Arch St., Philadelphia 3. Executive secretary: Thos. A. Fernley.

September 29-Oct. 2, American Institute of Steel Construction Inc.: Annual convention, Empress Hotel, Victoria, B. C. Institute address: 101 Park Ave., New York 17. Executive vice president: L. Abbett Post.

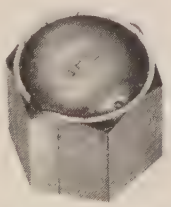
September 30-October 3, Association of Iron & Steel Engineers: Fall meeting and exhibit, Hotel Statler and Public Auditorium, Cleveland. Association address: 1010 Empire Bldg., Pittsburgh 22. Managing director:

"Security" keeps 'em tight

for "safety" sake



The photo diagram, above, shows a cross section of the Security Locknut. The Locking Insert grips the bolt with the terrific tension that only the best of spring steels could exert. Simple, dependable, positive.



The Security Caploc—a cap nut that locks—costs less in most cases than an acorn nut, stays tight and protects bolt ends from corrosion.

HIGH-SPEED rail travel is a real test on Locknut service. The vibration, spring action and "pound" in a locomotive truck can beat almost anything loose.

It is significant that Fairbanks-Morse & Co., builders of Diesel locomotives, has specified Security Locknuts on the spring seats of their new 2400 hp truck assembly.

But, whether you want to "keep it tight" for safety or economy reasons there is one thing you can be sure of and that is "Security Locknuts stay put". They are installed like any ordinary nut. No extra parts, no pins, no wiring.

They can be adjusted and removed and reused any number of times. They stay tight in the face of vibration that would destroy the bolt and the load is borne by the nut, not the locking insert.

Tests made by an unimpeachable source, and which you will acknowledge to have been grueling, have proved the holding quality of Security Nuts. If you have a fastener problem you should see the report of these tests. Put your toughest job up to us. We can keep it tight.

Send the coupon for more details. Sizes from 3/8" to 3".

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Giving you technical assistance in selecting the right steels and using them to your best advantage.

Saving you money on your regular job-to-job steel requirements by helping you place your orders to get the best price.

If you are not already well acquainted with the United States Steel Supply salesman who calls in your area, phone, write or wire our nearest warehouse or sales office *today* and start enjoying the benefits of **a personalized steel service.**

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Warehouses and Sales Offices: BALTIMORE · BOSTON · CHICAGO · CLEVELAND · LOS ANGELES · MILWAUKEE · MOLINE, ILL. NEWARK · PITTSBURGH · PORTLAND, ORE. · ST. LOUIS · TWIN CITY (ST. PAUL) · SAN FRANCISCO · SEATTLE

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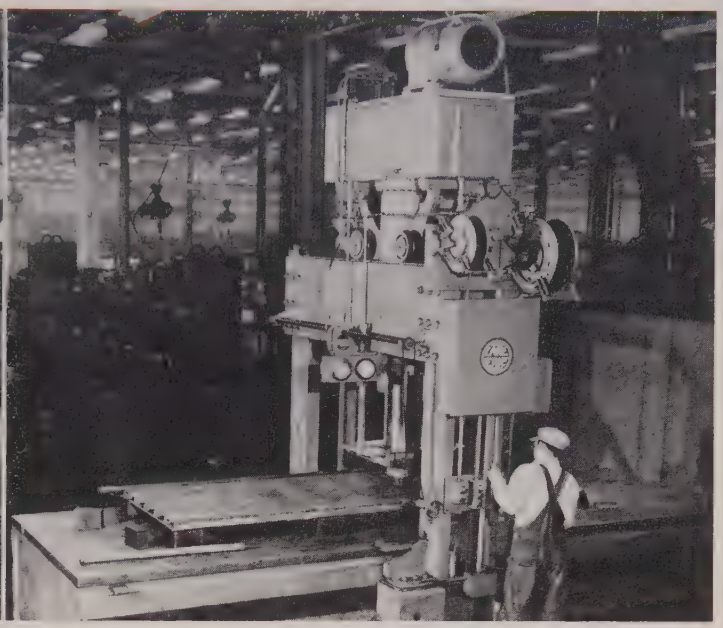
USS TRADE MARK

UNITED STATES STEEL

New Products and Equipment

SLAT DISTANCE REMAINS THE SAME AT ALL POINTS
. . . design prevents passage of wire or nails into the track



RAM TRAVELS AT TWO SPEEDS, IN LONGITUDINAL AND TRANSVERSE
. . . available with one or two travelling heads on the same bed frame

irless Barrel Cleaner

SE REPLY CARD—CIRCLE No. 1

Two sizes, in 6 and 12-cu ft capacity, are included in a line of airess Rotoblast barrels introduced y Pangborn Corp., Hagerstown, Id. Work conveyor is driven by a ardened steel chain, using special ast ductile iron slats that will not inch the work. Slats turn on the itch line of the sprockets, the disance between slats remaining the ame at all points in travel. This revents passage of wire or chill ails into the track where operaon could be affected. Drive operes by v-belts to a spur gear reucer mounted directly on the coneyor shaft.

Abrasive-tight door and housing ave been developed to retain abrave within the machine. Woven wire esh door is backed with vulcaned rubber and slides on rollers in mechanized labyrinth. During peration, cleaning and reclaiming ystem functions constantly, reoving all sand and debris.

edal Operated Furnace Door

E REPLY CARD—CIRCLE No. 2

Operator can use both hands for ading material in the oven rough application of a mechanil, foot-operated device for opening and closing the door of an electric furnace built by Waltz Electric Furnace Co., 1901 Symmes St., Cincinnati, O. Pedal throws door out of balance with counterweight, opening or closing according to which pedal is depressed. Access doors on both sides of the shelves are provided for servicing door mechanism.

Furnace operates on 220v, 60 cycles, is available in single or three-phase. It has automatic temperature control with input controller. Heating elements are heavy chrome-nickel ribbon, held in grooves in the inner face of tile that acts as the inside lining. These element bricks are backed with 7 inches of block insulation. The three-phase furnaces are star connected; single-phase units are connected in series, then to the magnetic contactor.

REPLY CARDS

on page 149 will bring you more information on any new products and equipment in this section.

Travelling-Head Straighteners

USE REPLY CARD—CIRCLE No. 3

Capacities from 200 to 2000 tons are available in travelling-head straightening presses designed by Lake Erie Engineering Corp., Buffalo, N. Y. Straighteners feature optional two-speed ram travel in both longitudinal and transverse directions over the entire bed area. This should reduce setup and operating time necessary for straightening work.

Dove-tailed keys on the side frames provide ample strength. These grip the bed in a pincer-like action during pressing operations. Additional rigidity is provided by large horizontal keys that secure the side frames to the cross-head above bed and to cross tie below.

Other features include use of wheels for smoother traversing action, totally enclosed gearing, adjustable pressure and stroke controls and combination of pushbutton and hand lever controls.

Variable Pitch Motor Pulley

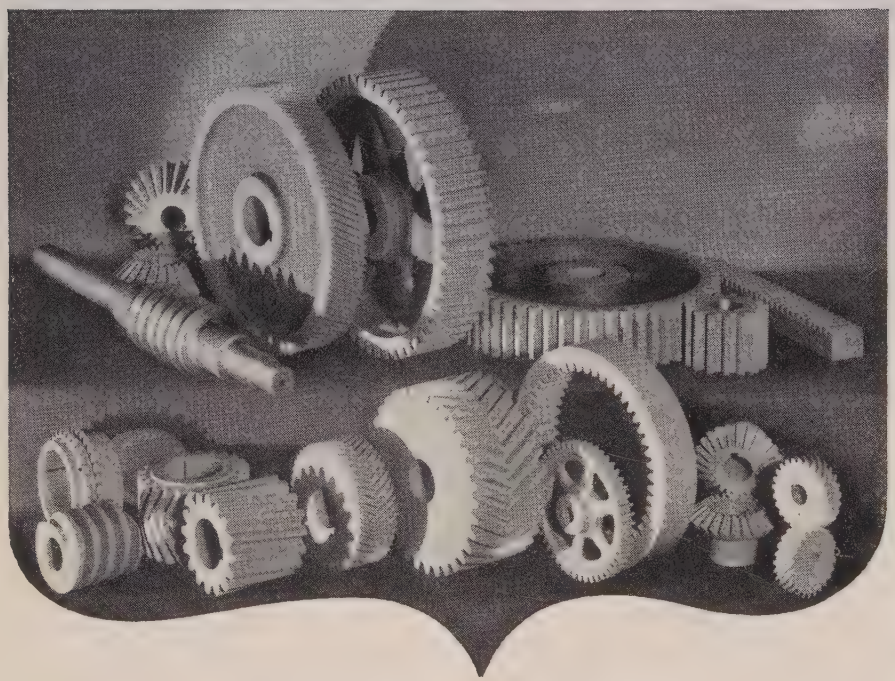
USE REPLY CARD—CIRCLE No. 4

Variation of 9 to 1 on fixed centers is a feature of a variable pitch motor pulley offered by Gerbing Mfg. Corp., Northbrook, Ill. Speed change is accomplished by an axial

INDUSTRIAL GEARS

for every purpose from

an ounce **to 20,000 lbs.**



• Whether you require Spur, Spiral, Herringbone, Bevel, Mitre, Internal or Worm Gears—Worms or Non-Metallic Pinions... here they are... the finest made. For over a half century Horsburgh & Scott has specialized in making gears that represent the best in engineering design, accurate workmanship and fine materials. Economical too, for they are standardized and built to endure. With a complete line of all types and sizes . . . here's one source for all gears and gear products.

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 HAMILTON AVE. • CLEVELAND 14, OHIO, U.S.A.

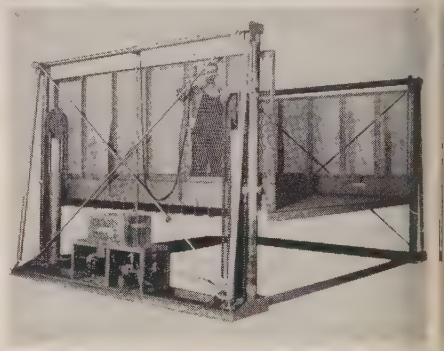
Send note on Company Letterhead for 488-Page Catalog 49

adjustment of a ball bearing-mounted retainer ring fixed on the pulley hub. This causes the pulley to change pitch diameters. Both manual and self-adjusting units are on fixed centers with belt length remaining constant. This makes variation of one pulley affect the other automatically in inverse proportion. With this drive, no adjustable motor base is needed.

Four Post Lifters Introduced

USE REPLY CARD—CIRCLE No. 5

Heavy truck and railway car-loading can be facilitated by application of a series of Electraulic four post lifters announced by Service Caster & Truck Corp., Albion, Mich. Lifters are built for level-to-level and floor-to-floor movement of trucks and skids, materials, heavy parts, etc., in plants or warehouses. Units are



. . . eases heavy truck, railway car loading

electric-hydraulic powered and designed for continuous operation. Safety features include a minimum safety factor of four used throughout the lifters. All units have dead-man-type pushbutton controls, expanded metal platform guards and nonskid steel platforms.

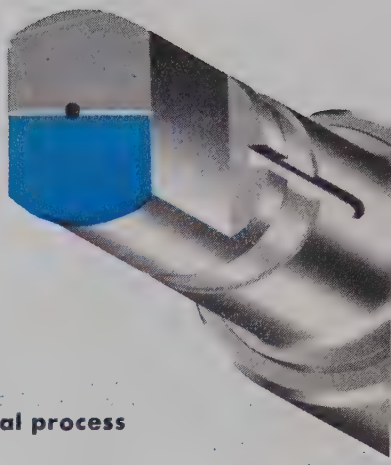
Models are available in capacities from 2000 to 12,000 pounds; platform sizes from 5 x 5 to 12 x 12 feet. Lifts range from 5 to 17 feet at speeds from 8 to 23 fpm.

Small Pump Line Improved

USE REPLY CARD—CIRCLE No. 6

Design improvements in its line of small, single-stage, double-suction pumps is announced by Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y. Pumps are the class DMV-DHV. They incorporate double mechanical shaft seals with sealed, prelubricated ball bearings.

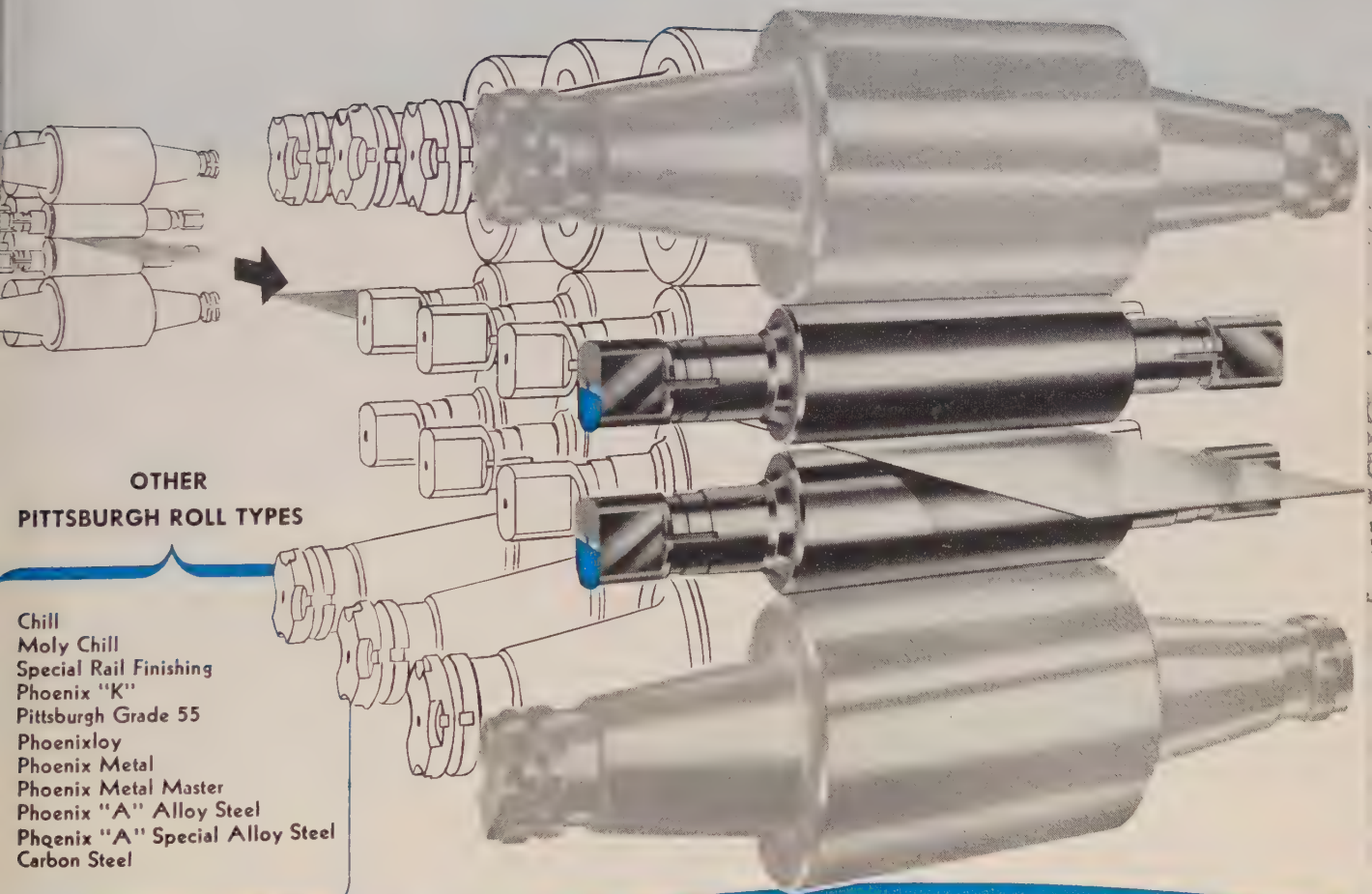
PITTSBURGH GRADE ROLLS are color marked for specific uses in rolling . . .



STRIP AND PLATE HOT MILL WORK ROLLS

FINISHING MILL STANDS
- Pittsburgh Grade Special process
- Pittsburgh Grade 45
- Pittsburgh Grade 35
- Pittsburgh Grade 25

ROUGHING MILL STANDS
- Pittsburgh Grade 35
- Pittsburgh Grade 25



OTHER PITTSBURGH ROLL TYPES

Chill
Moly Chill
Special Rail Finishing
Phoenix "K"
Pittsburgh Grade 55
Phoenixloy
Phoenix Metal
Phoenix Metal Master
Phoenix "A" Alloy Steel
Phoenix "A" Special Alloy Steel
Carbon Steel

PITTSBURGH ROLLS

PITTSBURGH ROLLS DIVISION of BLAW-KNOX COMPANY • PITTSBURGH, PA.

P.R.W.

Built in 3, 4, 5 and 6-inch sizes, pumps are made for general hydraulic service at temperatures to 200°F, capacities to 2100 gpm and pressures to 150 psi.

Use of a double shaft-seal provides more efficient sealing, prevents air leakage into the pump when operating under suction lift. Seal service life is extended under conditions when the pump is handling gritty and abrasive liquids, because external sealing liquid is injected to the seal box under pressure. This lubricates seal faces and prevents gritty fluid from reaching them.

Collector Is Self-Contained

USE REPLY CARD—CIRCLE No. 7

Self-contained dust collector intended for dust sources located at remote points is added to the line made by Aget-Detroit Co., 139 Main St., Ann Arbor, Mich. Unit requires 18 x 23 inches floor space, 25 inches overall height. It develops a rated 525 cfm at static suction of 2 inches water lift. Model 520 is made with single or double inlet connections, has a paddle-wheel and self-clearing type fan direct driven by a 1/3-hp continuous duty motor. The latter operates on either 110-v, single-phase or 220-440-v, three-phase, 60 cycle power.

Built-in cyclone separator removes dust down to 20 micron size, precipitating particles into the dust storage compartment that comprises the base of the unit. Remainder of the dust is removed from the air stream by easily renewable spun glass filter that comprises the unit's top.

Give you these features

Double-acting spring cushioned draw bar to minimize stopping and starting shock, positive trail at high speeds, maximum roadability on rough terrain, sturdy solid steel axle beam construction . . . these features combine to make CARAVAN units outstanding among axle assemblies.

In addition, CARAVAN axles are noted for versatility. They are suitable for use on all types of industrial, field-service, construction and military equipment . . . wherever dependable portability is needed.

Both single axle (2-wheel) assemblies and 4-wheel running gear equipped with automotive type steering are available to meet a wide range of requirements. Units of either straight or drop type construction can be supplied.

Write today for United's 12-page illustrated Catalog No. 101. In addition to specifications on the complete line of CARAVAN axles, it contains descriptions of automatic surge-control braking device, retractable third-wheel assembly and other CARAVAN accessories.

UNITED

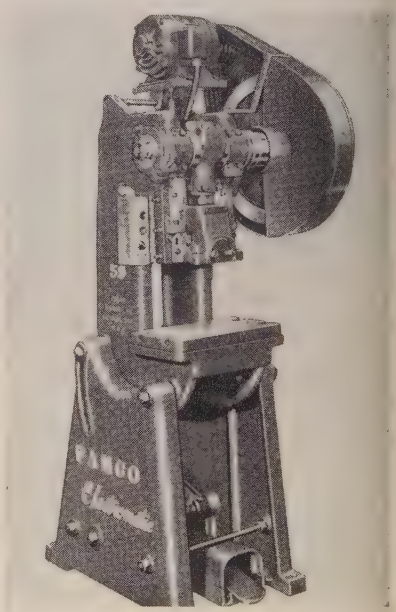
THE UNITED MANUFACTURING CO.

719 Interstate Street • Bedford, Ohio

Small Model Power Press

USE REPLY CARD—CIRCLE No. 8

Electrically-operated, nine-point jaw clutch is featured in the model 59 Electromatic power press announced by Famco Machine Co., Kenosha, Wis. Clutch assembly



. . . features electric nine-point jaw clutch

gives this 18-ton press increased versatility, making operation easier. It is activated by a simple foot control, or by hand controls which are optional.

Limit switch on clutch housing provides absolute single stroke control. Selector switch readies the press for either single stroke non-repeat or continuous action. An electronic timer converts the press into a fully automatic machine. Model is constructed of heavy cast semisteel. It has a one-piece, heat-

fuses finished faster with GULF CUTX B

Material—17 ST Aluminum Alloy; Operation—Turn, face, bore, and thread projectile fuse; Machine—6 spindle Conamatic; Cutting Oil—Gulf Cutx B, which proved superior to 4 other cutting oils by actual comparative tests; other benefits with Gulf Cutx B—better threads and longer tool life.

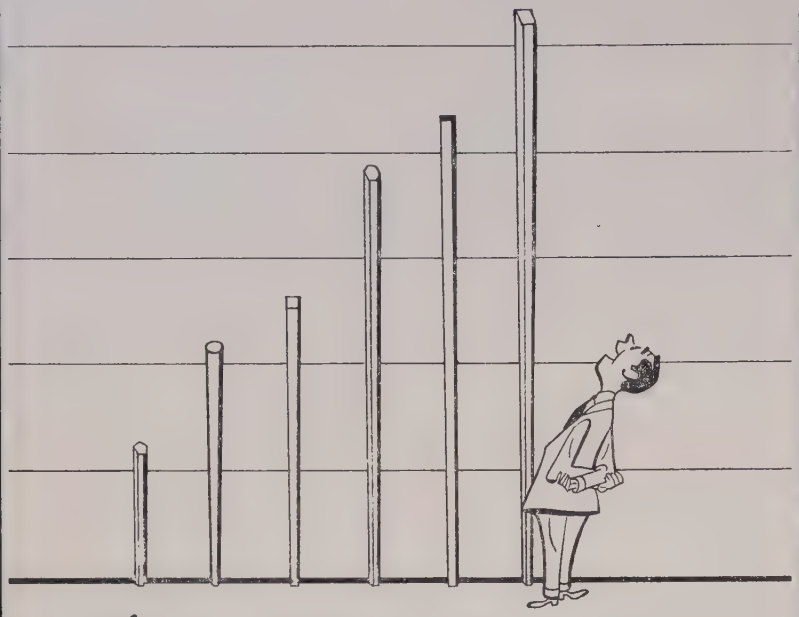
Another example of improved machining practice with Gulf Quality Cutting Oils! Call in a Gulf Lubrication Engineer today and let him help you find opportunities for greater production at lower cost through the use of the right Gulf cutting oil for the job. Write, wire, or phone your nearest Gulf office.

GULF OIL CORPORATION
GULF REFINING COMPANY
PITTSBURGH 30, PENNSYLVANIA

GULF SERVES INDUSTRY

OVER ONE HUNDRED YEARS OF CONTINUOUS SERVICE, ROUNDS, SQUARES, FLATS, HEXAGONS, OCTAGONS

BILLETS AND FORGINGS FOR PRODUCTION, TOOL ROOM AND MAINTENANCE REQUIREMENTS



things are looking up!

Yes, steel supplies *are* improving tonnage-wise! Even alloy steels are in better supply. However, the continued scarcity of many alloying materials makes certain grades of alloy steel still unobtainable, and substitute grades must be used.

Chances are, we can supply your needs . . . but if we can't, perhaps we can suggest and supply the substitutes best suited for your particular requirements.

Or possibly we can suggest alternative methods of manufacture, or variations in your present methods of treatment.

Your nearest W-L office will be delighted to be of service. Call them today!

Get in the SCRAP! . . . every pound means more steel for you!

Write today for your FREE COPY of the Wheelock, Lovejoy Data Book, indicating your title and company identification. It contains complete technical information on grades, applications, physical properties, tests, heat treating, etc.

WHEELOCK, LOVEJOY & COMPANY, INC.

Warehouse Service

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SANDERSON-NEWBOULD, LTD., MONTREAL

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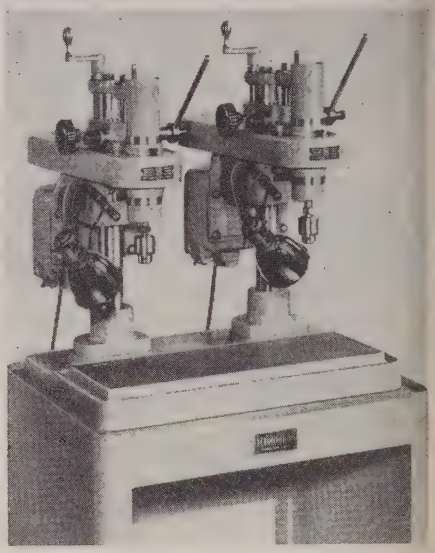
131 Sidney St., Cambridge 39, Mass. and Cleveland • Chicago • Detroit Hillside, N. J. • Buffalo • Cincinnati

treated alloy crankshaft and split bronze-bushed main bearings.

Small Hole Drilling Machines

USE REPLY CARD—CIRCLE No. 9

Single base, multiple spindle design in its small hole precision drilling machines is announced by Hamilton Tool Co., Hamilton, O. Machines have capacities of 0.004 to 5/16-inch hole diameter, clearances to 8-inches from center of



. . . in single base multi-spindle model

chuck to column and a maximum 14 inches from base to chuck. Adjustable stops are available on all machines for precision control of hole depth.

One model features spindle speeds variable from 840 to 9300 rpm, controlled by a graduated handwheel speed dial. Continuous base pads are machined with sufficient accuracy to make use of box fixtures feasible, thus increasing production materially.

Machine Crushes Welding Flux

USE REPLY CARD—CIRCLE No. 10

Machine made to facilitate reclamation of welding flux, the model 2C crusher, is offered by Robert Holmes & Bros. Inc., 510-520 Junction Ave., Danville, Ill. Hardened steel screen plates, manganese steel crusher hammers and alloy cast iron crusher chamber are resistant to abrasive effects of fused flux.

Machine provides a simple method for removing tramp iron and high grinding rate permits rapid preparation of fused flux for reuse. One unit can grind from 1500

BROWNHOIST

UILDS BETTER ULK MATERIALS ANDLING QUIPMENT

r over three quarters of a century ownhoist has engineered, designed d built boat unloaders, storage idges, cranes and car dumpers for ficient handling of coal, ore and her bulk materials in practically ery corner of the world.

ilroads, steel mills and dock erators interested in machinery r handling ore, coal or other bulk aterials will find that it pays to scuss their requirements with Brownist engineers.

ownhoist equipment includes nloaders, fast plants, traveling bridge anes, Diesel and Diesel Electric comotive cranes, clamshell buckets, r dumpers, car pushers, shipyard anes, and related machinery.

ROWNHOIST BUILDS BETTER CRANES

160

DUSTRIAL BROWNHOIST CORPORATION
Y CITY, MICHIGAN

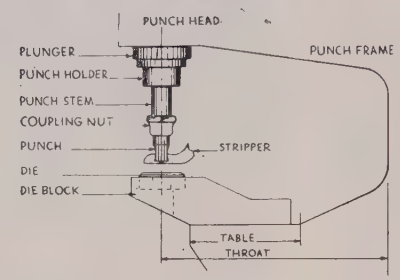
STRICT OFFICES: New York, Philadelphia, veland, San Francisco, Chicago, Canadian ownhoist, Ltd., Montreal, Quebec • **AGEN-ES:** Detroit, Birmingham, Houston, Los Angeles

"Buffalo" Tips on Better PUNCHING

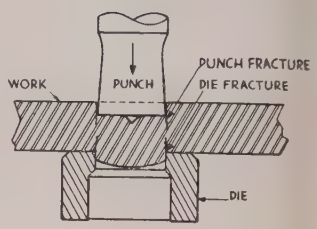
Care and Selection OF PUNCHES & DIES

FIRST, since the punch passes through the work and into the die, the die must be very slightly larger than the punch. For example, in punching 1/4" and heavier materials, dies with a maximum clearance of 1/32" give best results. Also, both punch and die should be set up to insure the punch entering the die centrally. If the punch strikes the edge of the die, either or both may be broken. However, proper clearance and proper alignment permit a smooth stroke with a minimum of burring.

It pays to keep punches sharp. It cuts down on breakage and gives the cleanest possible holes. Frequent application of heavy oil to the punches is of great importance, particularly when punching heavy and hard material, where considerable heat is developed in forcing the punch through the material.



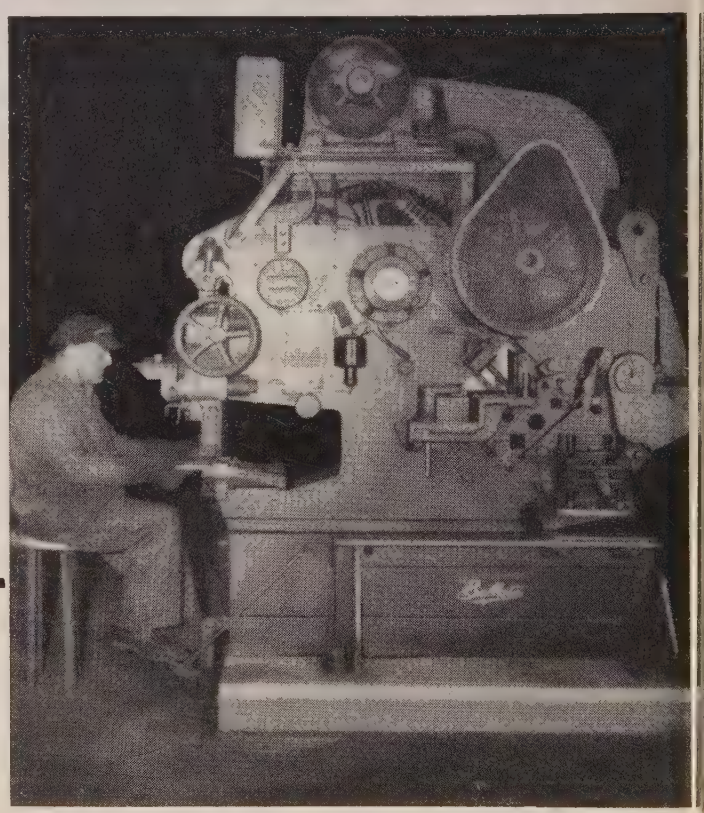
Showing a common type of single punch unit. Multiple units of the gag or floating types are also commonly used.



Both punch and die cause fracture as punch goes thru steel plate.

FOR USEFUL INFORMATION

on metal fabrication, send for "PUNCHING — SHEARING — BENDING", popular 80-page pocket size easy-to-read booklet. $3.00 Postpaid. Send M. O. or check.



At right is a "Buffalo" Iron Worker, which not only punches, but shears plate, cuts round and square bars and angles and notches & copes. "Buffalo" multi-purpose fabrication machines like this are multiplying the speed of maintenance and production operations in railway shops, steel mills, other heavy industries. WRITE FOR INFORMATION on your metalworking problem!

DIAMOND JUBILEE 75TH ANNIVERSARY

"Buffalo" MACHINE TOOLS

BUFFALO FORGE COMPANY

158 MORTIMER STREET BUFFALO, NEW YORK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

DRILLING PUNCHING SHEARING CUTTING BENDING

to 2000 pounds per hour. Crusher is sufficiently simple in design to permit operation by unskilled workmen.

High Loads Handled Safely

USE REPLY CARD—CIRCLE No. 11

Extension backrest developed as a standard accessory by Towmotor Corp., 1226 E. 152nd St., Cleveland 10, O., makes handling of unusually high loads safer and simpler. Designed for use with any of the company's truck models, the unit

. . . backrest simplifies multi-unit lifting

can be attached in a few seconds whenever multi-unit handling is necessary. It furnishes increased support to loads tilted backward, minimizing the possibility of such items as bags, drums or boxes dropping on the driver.

To attach, extension pins are inserted into sockets welded to the standard lifting carriage frame. Pins are cold-rolled steel, machined for accurate fit in the carriage sockets. Backing plates are attached between the extension backrest frame and the pins.

Portable Winding Tester

USE REPLY CARD—CIRCLE No. 12

Practical tool for preventive maintenance, production control and motor repair is introduced by Columbia Technical Corp., 5 E. 57th St., New York 22, N. Y. The company's portable electronic winding tester is sufficiently sensitive to detect a single shorted turn of No. 40 AWG wire. Tester can be used with equal sensitivity on both alternating and direct cur-

for 50 to 1 reduction on
OZALID STREAMLINER
developer drives . . .

WINSMITH
SPEED REDUCERS ®

A copy in less than 30 seconds! Printing speed up to 14 ft. per minute! That's what this Ozalid Streamliner turns out for thousands of engineering, purchasing, personnel and accounting departments across the nation.

Because reproduction of letters, reports, drawings and records usually "can't wait", every component of Ozalid copying machines must be constantly relied upon to do its bit without failure. The Winsmith single reduction, 50:1 ratio, right angle drive, worm gear type reducer is a good example.

Serving the blower, developer and pump drive, which is powered by a 1/3 hp motor, this small, compact Winsmith unit is designed for the long-lasting service which Ozalid requires of all its components. Moreover, its vibrationless operation is necessary to the smooth, quiet performance for which the Streamliner is so well known. "We are pleased with the little servicing that these units have demanded over countless hours of usage", says Ozalid's chief engineer.

The importance that Ozalid, Division of General Aniline and Film Corporation, places on the selection of a speed reducer is typical of most industries . . . the very reason so many have become Winsmith users. Within the 1/100 to 85 hp range, no other speed reducer is available in so complete a selection of standardized types, sizes and ratings. *Catalog 148 will convince you.* Write!

WINSMITH, INC.
14 EATON ST.,
SPRINGVILLE (Erie County), N. Y.

MEMBER OF AGMA

rent devices. Called the PMD model, the unit does not require energized windings for testing purposes. Field oscillates at 800 cycles.

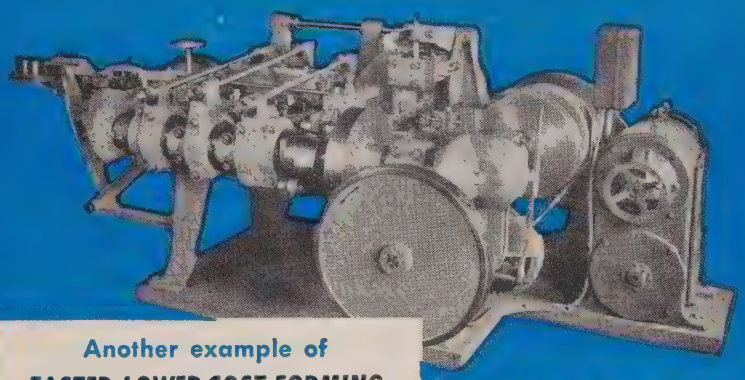
Precision Air Drill Unit

USE REPLY CARD—CIRCLE No. 13

Hydraulic monitor designed to result in quick approach to the work, positive adjustable rate through the work and rapid return, is cited as the feature of an air drill unit made by Alkon Products Corp, 698 E. 142nd St., New York 54, N. Y. The precision unit has positive stop adjustments on both forward and return strokes. Stroke is a full 2 inches with controlled feed of 1¼-inch. Control of feeding rate is taken over at any desired point in the spindle travel by the monitor, giving a fully adjustable feed rate.

Drill is designed for universal application where high speeds are necessary. Base machined accurately to spindle alignment facilitates easy setup on brackets or fixtures. Compact design permits setup of two or more drill units as close as 2 inches between centers. Maximum speed is 12,000 rpm, adjusted easily by size of the standard spline pulley.

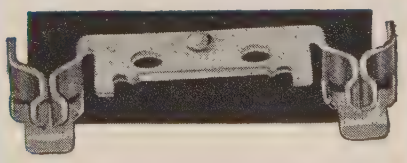
PRODUCTION RECORDS Broken with NILSON 4-SLIDE Machine!



Another example of FASTER, LOWER COST FORMING of Ribbon Metal Stock

180 Terminal Contacts Per Minute

7 Separate Operations Eliminated



A famous national manufacturer tripled production of the Terminal Contact illustrated above (in actual size) and reduced production costs proportionately by replacing several progress die set-ups with one Nilson S-3-F four side machine. *Seven separate operations were eliminated;* 180 completed contacts produced per minute. Time required for tooling changes was reduced 50% over similar type machines.

This example clearly shows the big savings you can make in overhead, maintenance, labor and time with a Nilson 4-slide!

Taking stock directly from the coil, NILSON metal ribbon stock four-slide machines automatically feed, straighten, pierce, blank, swage, stamp, coin, cut off and perform up to five forming operations with speed and accuracy. Built in five models with capacities up to 2½" wide and feed lengths up to 15". For specific recommendations on your wire and ribbon metal forming problems, send details, prints or samples of your operation to us when you request the bulletin.

THERE'S STRIKE LIKE A NILSON

Specialists in Wire Forming Equipment for Over 50 Years

THE A. H. NILSON MACHINE COMPANY

1507-D RAILROAD AVENUE, BRIDGEPORT 5, CONNECTICUT

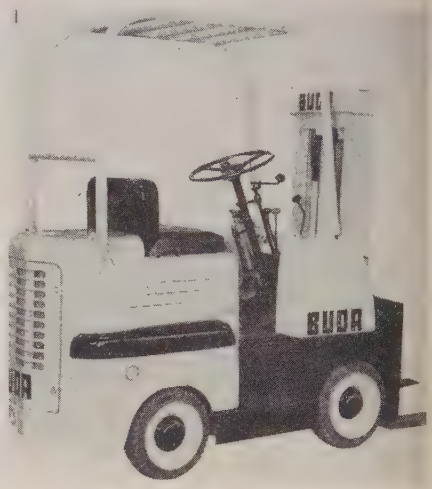
OTHER NILSON PRODUCTS:

- Automatic chain-making machines
- Automatic staple forming machines
- Wire and Stock reels
- Foot Presses
- Wire straightening equipment
- Slide Feeds for Presses

Diesel, Gasoline Lifts Added

USE REPLY CARD—CIRCLE No. 14

Supplementing its line of fork lift trucks in the FT series, Buda Co., Harvey, Ill., is introducing two 3000-pound capacity trucks—one diesel, the other gasoline powered. Model FT30-15 is powered by the company's four cylinder, 49-hp



. . . 3000-pound models supplement FT series

gasoline engine. Model FTD30-15 has a diesel engine of identical cubic inch displacement, bore, stroke and mounting dimensions.

Mechanical features of both models include removable wet sleeve type cylinder liners, quick-change 11-inch industrial clutch and center point steering. Single lever gear shift is mounted on steering column for operator's convenience. Both models are available in five standard masts with 72, 84, 108, 114 and 120-inch lift. Both have 15-inch load centers.

Phase Sequence Relay

USE REPLY CARD—CIRCLE No. 15

Shepard Elevator Co., Cincinnati 9, O., introduces a phase sequence relay. It gives positive phase protection to all types of polyphase rotating machinery that might function improperly or be damaged by application of reverse phase sequence, extremely low voltage, or single phase voltage.

Easier installation with "Quikupl" made possible a reduction of 40 to 50% in time and labor when this line was installed in Feb. 1951. Since then "Quikupl" has been completely tested to complete satisfaction. Place: Precision Film Laboratories, Inc. New York.

"QUIKUPL"®

STAINLESS STEEL FITTINGS

Now . . . you can join tubing or pipe without threading, flaring, sweat-soldering, brazing or welding. Simply use "Quikupl" . . . the *completely new . . . completely tested* stainless steel fitting.

"Quikupl" cuts labor and installation time. Lines already installed show time and labor can be reduced 40 to 50%—or more. Tubing or pipe is simply cut to length, deburred and inserted into the fitting. Tightening a small screw completes the coupling. A resilient sealing ring . . . nontoxic to foods, and resistant to most chemicals . . . provides initial squeeze fit between fitting and tube or pipe. The higher the pressure, the better the sealing effect.

"Quikupl" is a money saver. You can use Schedule 5, the lightest pipe made—or tubing with even a lighter wall. You pay less per foot because you buy only the wall thickness needed to do the job.

"Quikupl" couplings, tees, adapters and elbows (45° and 90°) are available from Frasse warehouse stock in Types 304 and 316 Stainless Steel—tube and pipe sizes range from 1" O.D. to 4" O.D.

Facts about "Quikupl" fittings and how you can save with them are outlined in Frasse Engineering Memorandum #7. Send for your copy today.

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Bars • Sheets • Strip • Plates • Wire
Tubing • Pipe • Valves • Fittings

GET FACTS

4-JA

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17 Grand Street
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Gentlemen: Please send me your Engineering Memorandum #7 containing complete facts about "Quikupl" stainless steel fittings.

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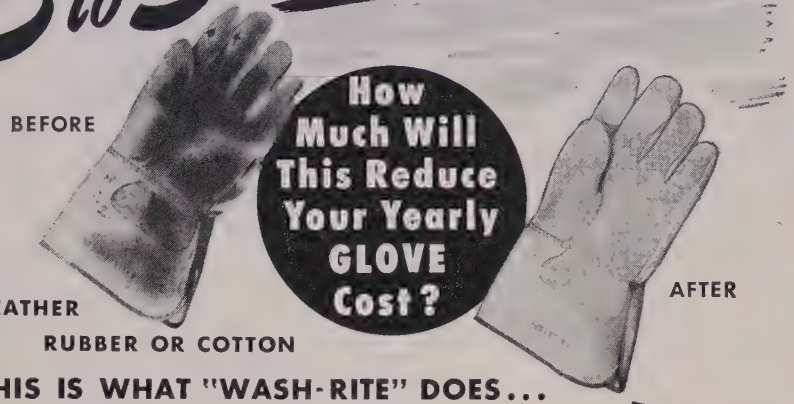
3 to 5 times LONGER!



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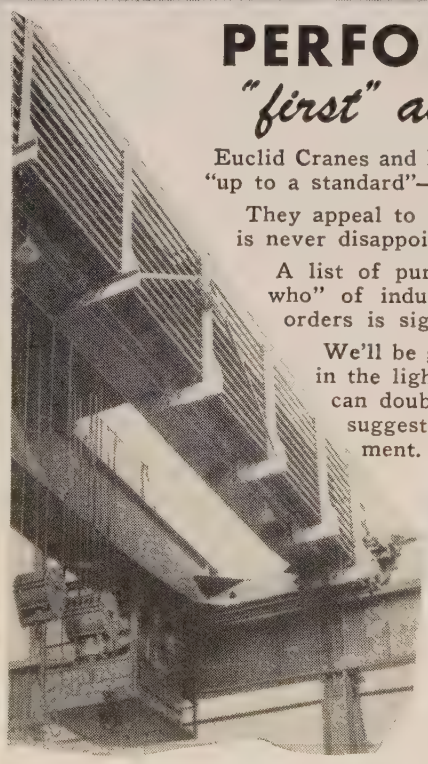
PERFORMANCE
"first" and "foremost"



Euclid Cranes and Hoists have always been built "up to a standard"—never "down to a price."

They appeal to the seeker for quality and he is never disappointed.

A list of purchasers reads like a "whose who" of industry. The record of repeat orders is significant and impressive.

We'll be glad to discuss your problems in the light of our long experience and can doubtless offer some constructive suggestions as to methods and equipment.

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EUCLID CRANES AND HOISTS
Raise Profits

It will operate on either two or three phase alternating current.

Changes to Tiering Pallet

USE REPLY CARD—CIRCLE No. 16

Using Dubl-Duty pallet stacker conversion kit, introduced by Elizabeth Iron Works Inc., Elizabeth, N. J., any standard wood pallet can be changed into a tiering pallet for storage of fragile or irregular-shaped merchandise. Kit contains four tiering attachments and standards, nuts and bolts.

Small Magnetic Chucks

USE REPLY CARD—CIRCLE No. 17

Three small electromagnetic chucks are available from Hanchett Magna-Lock Corp., Big Rapids, Mich. Sizes are 5 x 10 inches, 6 x 12 inches and 6 x 8 inches Units facilitate holding workpieces for hand sawing, scraping, layout, filing, welding, drilling, grinding and similar operations.

Automatic Air Control Valve

USE REPLY CARD—CIRCLE No. 18

Ventomatic air control valve for use with air suction systems and dust collectors on such units as metal grinding and polishing machines, is announced by Kindt-Collins Co., Cleveland 11, O. It can be fitted to any machine, pipe or installation within its scope. Valve opens and closes automatically as machine switch is turned on and off.

Heavy Duty Conveyor Pulleys

USE REPLY CARD—CIRCLE No. 19

Type HD heavy-duty conveyor pulleys with Wedg-Tite tapered hubs are available from American Pulley Co., Philadelphia 29, Pa. Hubs are of split-tapered construction for speed in installation and removal of the conveyor pulleys. Pulleys are totally enclosed and are made in sizes up to 6 inches diameter by 63 inches face for shafts up to 10 inches.

Fast Drying Metal Primer

USE REPLY CARD—CIRCLE No. 20

An iron oxide zinc chromate primer for steel and iron has been developed by Thompson & Co., Oakmont, Pa., that can be re-coated with lacquer or any other finish coat within 3 minutes after ap-

Metal Muscles for Modern Farmers

Push-button farming — with hydraulic tubular steel cylinders replacing weaker, less efficient human muscles — is but one of the many opportunities for improving design of plows, planters, drills, mowers, cultivators and other farm equipment, with OSTUCO Tubing.

Designers and engineers in the farm equipment industry, like those in many other fields, are finding OSTUCO Tubing ideal for cylinders, levers, handles, fuel lines, axles, spacers, bushings, bearings, and exhaust parts, to mention but a few of the applications.

They like OSTUCO Tubing for flexibility in design, great strength, light weight, good machinability, smooth finish, high quality, low cost.

We cannot always promise early delivery estimates on new civilian orders, because of military demands, but it will pay you to consult our experienced engineers about OSTUCO Tubing when redesigning your products to meet future competition.

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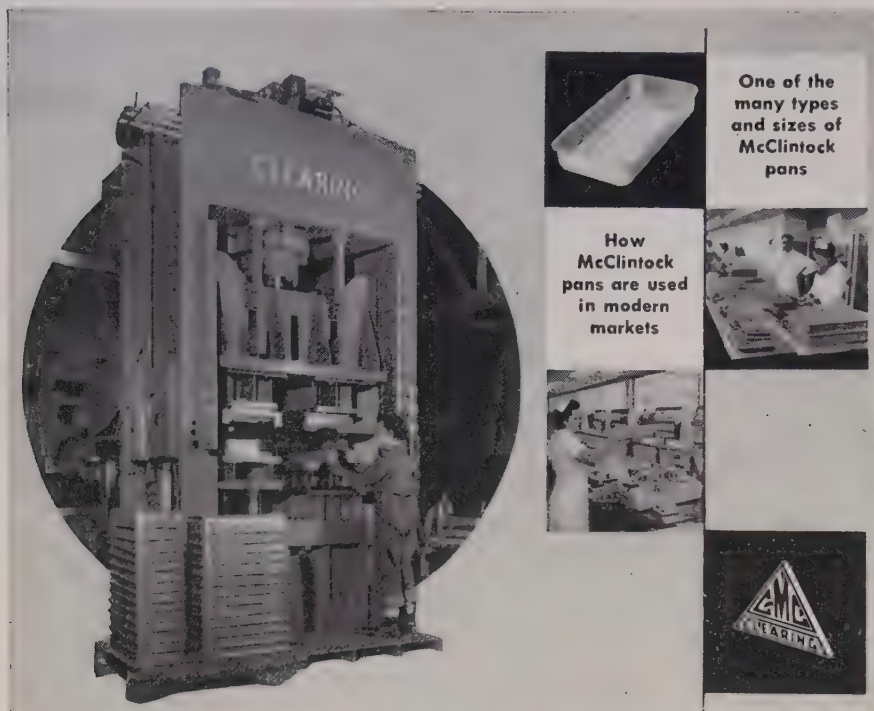

One of the many types and sizes of McClintock pans

How McClintock pans are used in modern markets

SMOOTH way to do a SMOOTH JOB

McClintock Manufacturing Co. of Los Angeles manufactures an extensive line of metal platters and pans used by up-to-date markets for the display of meat. For space in the cabinets, the pans must be rectangular; for sanitary reasons they must be one-piece and perfectly smooth. And they can't cost too much, either.

In the picture you see how McClintock uses a Clearing hydraulic press in drawing these pans. Automatic sequence control simplifies operation and delivers maximum production. Cushion pressure is accurately regulated, and the result is a smooth piece smoothly produced every time.

Whether your metal forming problem is like this one, or entirely different, Clearing engineers can help you. Clearing makes both mechanical and hydraulic presses to fit virtually any production requirement.

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HAMILTON DIVISION, HAMILTON, OHIO

CLEARING PRESSES
THE WAY TO EFFICIENT MASS PRODUCTION

plication without lifting or crazing. Primer is durable without a finish coat. Designated SP-3523H, it has a satin flat finish and can be applied by spray, brush, flow coat or dip.

Vertical Grinders

USE REPLY CARD—CIRCLE No. 21

Two vertical grinders are introduced by Rotor Tool Co., Cleveland 12, O. B-35, a heavy duty vertical, is used for disk sanding, cup wheel grinding and cup wire brushing. B-12 is recommended for use with sanding pads, cutoff wheels and where a powerful, light, fast moving tool is required.

Diamond Wheel Lap

USE REPLY CARD—CIRCLE No. 22

Spectrum diamond lapping compound, developed by Penn Scientific Products Co., Philadelphia 24, Pa., is available in any desired grit size. It is produced from pure virgin diamond. Compound is said to increase life of cutting tools and provide sharp, finish-lapped cutting edges.

Piston-Operated Steam Trap

USE REPLY CARD—CIRCLE No. 23

Type SP piston-operated steam trap for applications where exceptionally large capacities are required, is announced by Velan Engineering Co., Jersey City, N. J. It has a 2-inch orifice and large air-discharge capacity. All moving parts are made from stainless steel including piston plunger, piston liner and spring.

Metal Cleaner

USE REPLY CARD—CIRCLE No. 24

Compound 31, developed by Oakite Products Inc., New York 6, N. Y., is a highly concentrated liquid detergent for prepaint treatment of metal by dipping or hand-swabbing methods. Its detergent

USE A REPLY CARD

Just circle the corresponding number of any item in this section for more information.

properties effectively remove light soils as well as soldering and welding fluxes. It also possesses acid ingredients that remove rust, heat scale, tarnish and other oxides.

Carbide Tipped Circular Saw

USE REPLY CARD—CIRCLE No. 25

A line of standard type and on-the-job engineered and precision fabricated tungsten carbide tipped circular saws is introduced by Rockwell Mfg. Co., Pittsburgh, Pa. Saws are 6 to 36 inches in diameter and cut wood, fiber boards, laminates, plastics, highly abrasive materials, nails and wire.

Floor Resurfacing Material

USE REPLY CARD—CIRCLE No. 26

Steelhard, a floor resurfacing and patching material, is available from Monroe Co. Inc., Cleveland 6, O. It is for use over concrete indoors or out and will withstand heavy traffic 4 to 6 hours after application. It comes ready to use without mixing or thinning.

Toolmakers' Parallel Clamps

USE REPLY CARD—CIRCLE No. 27

A line of toolmakers' parallel clamps with openings ranging from $\frac{5}{8}$ to $3\frac{1}{2}$ inches, is offered by Precision T. C. Co., Cicero 50, Ill. They are hardened throughout and have metal clips to hold screw in place on the return.

Solvent for Metal Cleaning

USE REPLY CARD—CIRCLE No. 28

Kemisol A, an improved chemical solvent for cleaning metal parts, is offered by Wayne Chemical Products Co., Detroit 17, Mich. It is neutral, odorless, nontoxic, noninflammable and removes oil and grease from parts. Solvent is noncorrosive to aluminum, brass, copper and most other nonferrous metals.

USE A
REPLY CARD
Just circle the corresponding number of any item in this section for more information.

RUBBER bonded to METAL*

COMPLETE MOLDING AND MACHINING FACILITIES AVAILABLE

Rubber-metal fabrications for application in electrical control devices, conveyors, switches, contacts, controllers, control valves and a wide range of processing equipment now can be supplied in a variety of sizes and shapes.

Intricate as well as *simplified parts* can be fabricated using almost any shape or cross section of metal or ceramic material. Both *ferrous* and *non-ferrous metals* can be fabricated into the rubber parts.

Rubber compounds available for use in the metal-rubber fabrications include natural or reclaimed stocks as well as from Buna S, Buna N, Neoprene, Butyl, Thickol and other synthetics.

Rubber-bonded-to-metal parts can be furnished which will remain stable upon exposure to temperatures ranging from -75 to 200 degrees F. Special stocks featuring resistance to abrasion, weathering and various chemicals can be utilized in parts. ANDAL is a manufacturer of parts for prime contractors of defense items.

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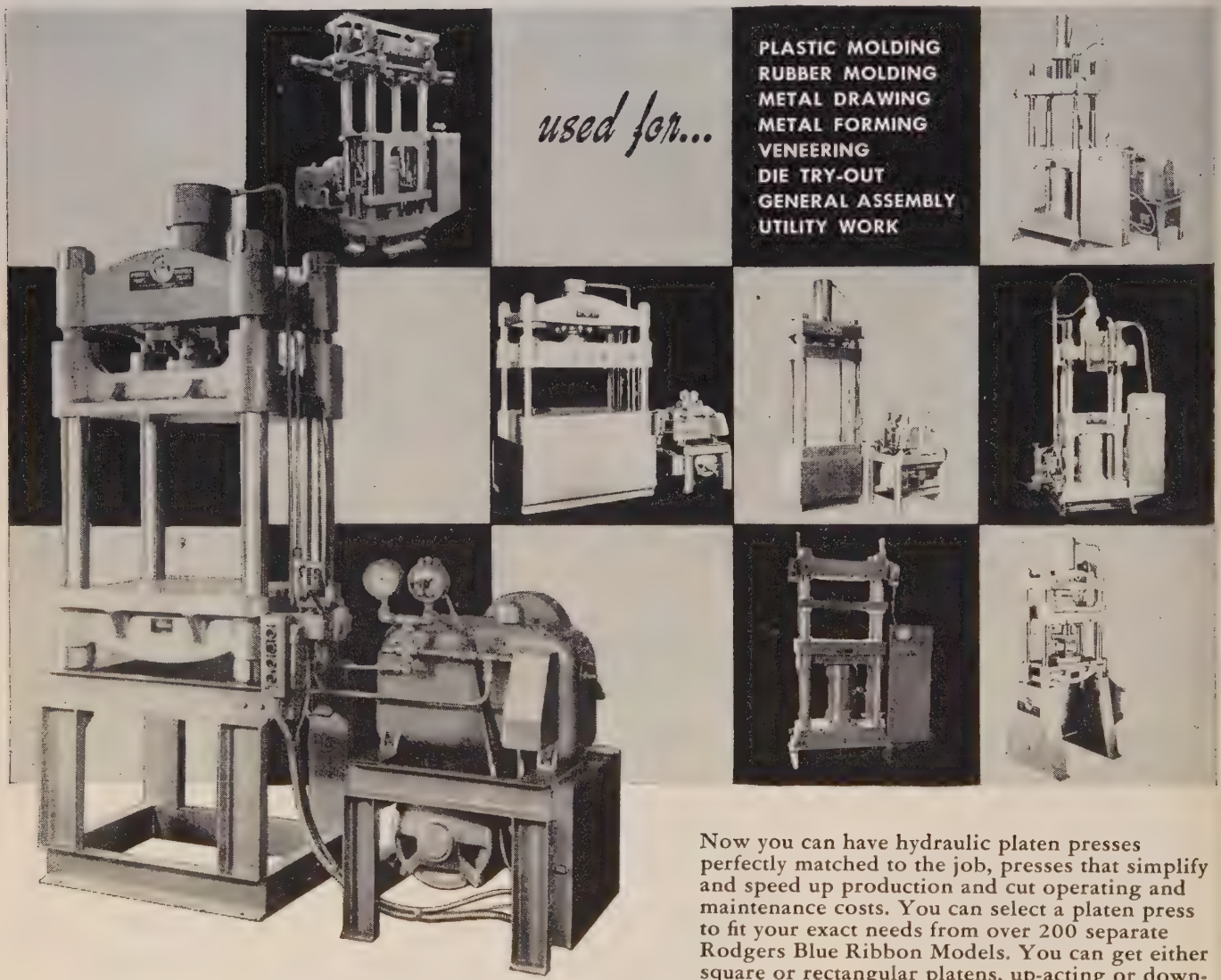
announcing... the new Rodgers blue ribbon line of platen presses designed for power, performance and economy on all types of production jobs!

- **POWER** — from 10 to 500 tons pressure!
- **PERFORMANCE** — for precision work on all types of materials!
- **ECONOMY** — simple, rugged design — easy to service!



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Write for the new illustrated Rodgers Blue Ribbon Catalog No. 320 giving complete specifications on 229 different models!

Now you can have hydraulic platen presses perfectly matched to the job, presses that simplify and speed up production and cut operating and maintenance costs. You can select a platen press to fit your exact needs from over 200 separate Rodgers Blue Ribbon Models. You can get either square or rectangular platens, up-acting or down-acting, with a selection of hand, power driven or combination pumps to suit your work.

HYDRAULICS KEEP THE WORLD MOVING

Rodgers Hydraulic, Inc.

7423 Walker St., St. Louis Park, Minneapolis 16, Minn. HYDRAULIC POWER EQUIPMENT

The Market Outlook

STEEL production this year will be the lowest since 1949 even though capacity is greater than ever.

Even if full capacity operations could be resumed today and if new capacity being built could be brought in on schedule during this last half year, the most production that could be tallied for the year would be 96 million net tons. Immediate resumption of capacity operations are out of the question. It will take around ten days to get back up to 100 per cent after the steelworkers return to their jobs. And the additional capacity being built is behind schedule.

In 1949, also a steel strike year, production totaled 77,978,000 net tons.

A SETBACK—The first half of 1952 was marked by the lowest output for any first half year since 1948, the American Iron & Steel Institute reports. Production was only 45,028,660 net tons of steel for ingots and castings. June output of 1,639,000 tons was the lowest for any month since October, 1949, when the steelworkers were on strike.

Up to yesterday labor trouble in the steel industry this year cost the nation 14.5 million tons.

A LITTLE BETTER—The unstruck portion of the steel industry made a better showing production-wise last week than in any previous week of the latest strike, thanks to a return to work at some mills. Production of steel for ingots and castings edged up half a percentage point to 15 per cent of national capacity, and provided around 312,000 tons.

Inflationary effects of the strike are cropping out. Two of the companies new operating, Wisconsin Steel Co. and Pittsburgh Steel Co., started exercising their right under the Capehart formula to tack a 2.6 per cent increase onto their prices. Because of the possibility further increases might be granted by the government, the two companies did not change their posted base prices and extras; they merely are adding 2.6 per cent onto invoices.

SNOWBALLING—Closing of metalworking plants for want of steel is snowballing. It may slow down but not stop immediately with resumption of steel production. Steel distribution pipelines will have to be refilled and in many cases the pipelines of components will too before the metalworking industry can return to normal operations.

The small percentage of steel capacity that has continued to operate has been overwhelmed with a job of trying to provide steel for the most urgent of defense needs.

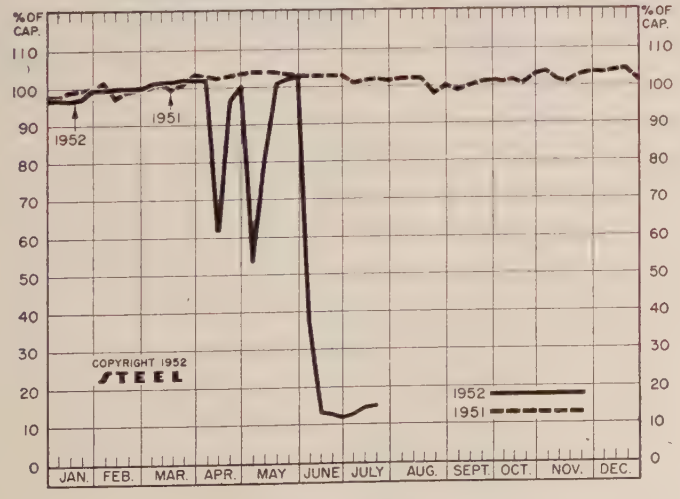
TIGHT SPOT—Sellers of bars are increasingly certain they will have little or no space available for orders for fourth-quarter delivery. Some producers say they would be able to accept only highly-rated defense work, which would replace tonnage already booked. Further darkening the outlook for bars, the new bar mill which Jones & Laughlin Steel Corp. planned to bring into operation at Pittsburgh in the fourth quarter can't be expected to come into production until early in 1953.

SOLD OUT—With a sharp spurt in sheet demand seemingly assured once the mills get production going again, big consumers of sheets are exerting extra effort to line up supplies of sheets. For one, the automobile industry is showing considerable interest in reviving a supply of conversion steel. Inland Steel Co., which figured substantially in such business in the past and had expected it to dry up completely in the third quarter, is sold out on ingot conversion capacity for the first two months after end of the strike and is booking into the third month. End products of the bulk of such conversion will be sheets, bars and a small amount of strip mill plates.

REVERSE PLAY—Indicative of the efforts being made to stretch the scarce steel supply as far as possible is the move by some distributors in the Los Angeles area to buy back and redistribute steel they previously sold to customers who now can't use it.

With the steel supply so disrupted, the Steel Products Industry Advisory Committee is to consider how steel should be allocated and distributed during the rush right after the strike.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended July 19	Change	Same Week 1951	Same Week 1950
Pittsburgh	8	+ 0.5*	98	99
Chicago	5	— 0.5	105	100.5
Mid-Atlantic	17	0	101	97
Youngstown	6	0	103	107
Wheeling	50.5	+ 1	92	101.5
Cleveland	0	0	98.5	97
Buffalo	0	0	104	104
Birmingham	0.5	0	100	100
New England	18	— 2	75	90
Cincinnati	33	— 3.5	103	102
St. Louis	88	+57	97	83.5
Detroit	49	+ 3*	100.5	105
Western	33	0	102	95
Estimated national rate	15	+ 0.5	102	98

Based on weekly steelmaking capacity of 2,077,040 tons in 1952; 1,999,034 tons for 1951; 1,928,721 tons for second half, 1950; 1,906,268 tons for first half, 1950.

* Change from revised rate for preceding week.

The Metalworking Outlook—p. 51 Production-Engineering News—p. 87

Composite Market Averages

	July 17 1952	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
FINISHED STEEL INDEX, Weighted:					
Index (1935-39 av.=100) ..	171.92†	171.92†	171.92†	171.92	118.67
Index in cents per lb.	4.657†	4.657†	4.657†	4.657	3.215
ARITHMETICAL PRICE COMPOSITES:					
Finished Steel, NT	$106.32†	$106.32†	$106.32†	$106.32	$69.82
No. 2 Fdry, Pig Iron, GT..	52.54	52.54	52.54	52.54	32.99
Basic Pig Iron, GT	52.16	52.16	52.16	52.16	32.92
Malleable Pig Iron, GT ...	53.27	53.27	53.27	53.27	33.71
Steelmaking Scrap, GT ...	42.50	42.50	43.00	44.00	36.08

Weighted finished steel index based on average shipments and Pittsburgh district prices of the following 14 representative products during 5-year base period 1935-39: Structural shapes, plates, rails, hot-rolled and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL Sept. 19, 1949, p. 54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are based on average prices at Pittsburgh, Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points except Birmingham.

Steelmaking scrap composite based on average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

† Preliminary, pending 1952 tin plate contract price announcement.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS

	July 17 1952	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	3.70	3.70	3.70	3.70	2.60
Bars, H.R., Chicago	3.70	3.70	3.70	3.70	2.60
Bars, H.R., del. Philadelphia	4.252	4.252	4.252	4.20	2.98
Bars, C.F., Pittsburgh	4.55	4.55	4.55	4.55	3.20
Shapes, Std., Pittsburgh ..	3.65	3.65	3.65	3.65	2.50
Shapes, Std., Chicago	3.65	3.65	3.65	3.65	2.50
Shapes, del. Philadelphia ..	3.93	3.93	3.93	3.91	2.64
Plates, Pittsburgh	3.70	3.70	3.70	3.70	2.65
Plates, Chicago	3.70	3.70	3.70	3.70	2.65
Plates, Coatesville, Pa. ...	4.15	4.15	4.15	4.15	2.80
Plates, Sparrows Point, Md.	3.70	3.70	3.70	3.70	2.65
Plates, Claymont, Del.	4.15	4.15	4.15	4.15	2.80
Sheets, H.R., Pittsburgh ..	3.60–75	3.60–75	3.60–75	3.60–75	2.50
Sheets, H.R., Chicago	3.60	3.60	3.60	3.60	2.50
Sheets, C.R., Pittsburgh ..	4.35	4.35	4.35	4.35	3.20
Sheets, C.R., Chicago	4.35	4.35	4.35	4.35	3.20
Sheets, C.R., Detroit	4.55	4.55	4.55	4.55	3.35
Sheets, Galv., Pittsburgh ..	4.80	4.80	4.80	4.80	3.55
Strip, H.R., Pittsburgh ...	3.75-4.00	3.75-4.00	3.75-4.00	3.75-4.00	2.50
Strip, H.R., Chicago	3.50	3.50	3.50	3.50	2.50
Strip, C.R., Pittsburgh	4.65-5.35	4.65-5.35	4.65-5.35	4.65-5.35	3.20
Strip, C.R., Chicago	4.90	4.90	4.90	4.90	3.30
Strip, C.R., Detroit	4.85-5.60	4.85-5.60	4.85-5.60	4.35-5.60	3.35
Wire, Basic, Pittsburgh ...	4.85-5.10	4.85-5.10	4.85-5.10	4.85-5.10	3.425
Nails, Wire, Pittsburgh ...	5.90-6.20	5.90-6.20	5.90-6.20	5.90-6.20	4.125
Tin plate box, Pittsburgh..	$8.70	$8.70	$8.70	$8.70	$5.75

SEMIFINISHED

Billets, forging, Pitts. (NT)	$66.00	$66.00	$66.00	$66.00	$50.00
Wire rods, $\frac{7}{32}$-⅜", Pitts. ..	4.10–30	4.10–30	4.10–30	4.10–30	2.55

PIG IRON, Gross Ton

Bessemer, Pitts.	$53.00	$53.00	$53.00	$53.00	$34.00
Basic, Valley	52.00	52.00	52.00	52.00	33.00
Basic, del. Phila.	56.75	56.75	56.75	56.49	35.72
No. 2 Fdry, Pitts.	52.50	52.50	52.50	52.50	33.50
No. 2 Fdry, Chicago	52.50	52.50	52.50	52.50	33.00
No. 2 Fdry, Valley	52.50	52.50	52.50	52.50	33.50
No. 2 Fdry, del. Phila. ...	57.25	57.25	57.25	56.99	38.63
No. 2 Fdry, Birm.	48.88	48.88	48.88	48.88	33.38
No. 2 Fdry (Birm.) del. Cin.	56.43	56.43	56.43	55.33	38.25
Malleable, Valley	52.50	52.50	52.50	52.50	33.50
Malleable, Chicago	52.50	52.50	52.50	52.50	33.50
Charcoal, Lyles, Tenn.	66.00	66.00	66.00	66.00	43.00
Ferromanganese, Etna, Pa.	188.00	188.00	188.00	188.00	140.25*

* F.o.b. cars, Pittsburgh.

SCRAP, Gross Ton (including broker's commission)

No. 1 Heavy Melt, Pitts...	$44.00	$44.00	$44.00	$45.00	$36.00
No. 1 Heavy Melt, E. Pa...	41.00	41.00	42.50	43.50	38.50
No. 1 Heavy Melt, Chicago.	42.50	42.50	42.50	43.50	33.75
No. 1 Heavy Melt, Valley..	44.00	44.00	44.00	45.00	37.50
No. 1 Heavy Melt, Cleve...	43.00	43.00	43.00	44.00	37.75
No. 1 Heavy Melt, Buffalo.	37.00*	37.00*	43.00	44.00	38.00
Rails, Rerolling, Chicago ..	52.50	52.50	52.50	52.50	41.50
No. 1 Cast, Chicago	45.00	45.00	45.00	49.00†	40.50

* Nominal. † F.o.b. shipping point.

COKE, Net Ton

Beehive, Furn, Connlsvl. ..	$14.75	$14.75	$14.75	$14.75	$11.50-12.50
Beehive, Fdry, Connlsvl. ..	17.50	17.50	17.50	17.50	14.50-15.00
Oven Fdry, Chicago	23.00	23.00	23.00	21.00	16.10

NONFERROUS METALS

Copper, del. Conn.	24.50	24.50	24.50	24.50	21.50
Zinc, E. St. Louis	15.00	15.00	15.00	17.50	10.50
Lead, St. Louis	15.80	15.80	14.80	16.80	14.80-14.85
Tin, New York	121.50	121.50	121.50	106.00	80.00
Aluminum, del.	19.00	19.00	19.00	19.00	15.00
Antimony, Laredo, Tex. ..	39.00	39.00	39.00	42.00	33.00
Nickel, refinery, duty paid.	56.50	56.50	56.50	56.50	35.00

PIG IRON

F.o.b. furnace prices quoted under GCPR as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies published on second following page.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem,Pa. B2	$54.00	$54.50	$55.00	$55.50
NewYork, del.	....	58.28	58.78	....
Newark, del.	57.02	57.52	58.02	58.52
Philadelphia, del.	56.75	57.25	57.75	58.25
Birmingham District				
AlabamaCity,Ala. R2	48.38	48.88	....	....
Birmingham R2	48.38	48.88	....	....
Birmingham S9	48.38	48.88	....	....
Woodward,Ala. W15	48.38	48.88	....	....
Cincinnati, del.	....	56.43	....	....
Buffalo District				
Buffalo R2	52.00	52.50	53.00	....
Buffalo H1	52.00	52.50	53.00	....
Tonawanda,N.Y. W12	52.00	52.50	53.00	....
No.Tonawanda,N.Y. T9	....	52.50	53.00	....
Boston, del.	62.65	63.15	63.65	....
Rochester,N.Y., del.	55.02	55.52	56.02	....
Syracuse,N.Y., del.	56.12	56.62	57.12	....
Chicago District				
Chicago I-3	52.00	52.50	52.50	53.00
Gary,Ind. U5	52.00	....	52.50	....
IndianaHarbor,Ind. I-2	52.00	....	52.50	....
So.Chicago,Ill. W14	52.00	52.50	52.50	....
So.Chicago,Ill. Y1	52.00	52.50	52.50	....
So.Chicago,Ill. U5	52.00	....	52.50	53.00
Milwaukee, del.	54.17	54.67	54.67	55.17
Muskegon,Mich., del.	....	58.80	58.80	....
Cleveland District				
Cleveland A7	52.00	52.50	52.50	53.00
Cleveland R2	52.00	52.50	52.50	....
Akron,O., del. from Cleve.	54.61	55.11	55.11	55.61
Lorain,O. N3	52.00	....	....	53.00
Duluth I-3	....	....	52.50	....
Erie,Pa. I-3	52.00	52.50	52.50	53.00
Everett,Mass. E1	....	59.75	60.25	....
Fontana,Calif. K1	58.00	58.50	....	....
Seattle,Tacoma, Wash., del.	....	60.66	....	....
Portland,Oreg., del.	....	60.66	....	....
LosAngeles,SanFrancisco, del. ...	60.16	60.66	....	....
GraniteCity,Ill. G4	53.90	54.40	54.90	....
St.Louis, del. (inc. tax).....	54.65	55.15	55.65	....
Ironton,Utah C11	52.00	52.50	....	....
Geneva,Utah C11	52.00	52.50	....	....
LoneStar,Tex. L6	48.00	*48.50	48.50	....
Minnequa,Colo. C10	54.00	55.00	55.00	....
Pittsburgh District				
NevilleIsland,Pa. P6	....	52.50	52.50	53.00
Pitts., N.&S. sides, Ambridge, Aliquippa, del.	....	53.87	53.87	54.37
McKeesRocks. del.	....	53.54	53.54	54.04
Lawrenceville, Homestead, Wilmerding, Monaca, del.	....	54.16	54.16	54.66
Verona, Trafford, del.	....	54.69	54.69	55.19
Brackenridge, del.	....	54.95	54.95	55.45
Bessemer,Pa. U5	52.00	....	52.50	53.00
Clairton,Rankin,So.Duquesne,Pa. U5	52.00	....	....	....
McKeesport,Pa. N3	52.00	....	....	53.00
Monessen,Pa. P7	54.00	....	....	....
Sharpsville,Pa. S6	....	....	52.50	53.00
Steelton,Pa. B2	54.00	54.50	55.00	55.50
Swedeland,Pa. A3	56.00	56.50	57.00	57.50
Toledo,O. I-3	52.00	52.50	52.50	53.00
Cincinnati, del.	57.47	57.97	....	....
Troy,N.Y. R2	54.00	54.50	55.00	55.50
Youngstown District				
Hubbard,O. Y1	52.00	52.50	52.50	....
Youngstown Y1	52.00	52.50	52.50	....
Youngstown U5	52.00	....	....	53.00
Mansfield,O., del.	56.65	57.15	57.15	57.65

* Low phos, southern grade.

PIG IRON DIFFERENTIAL

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson,O. G2, J1.....	$62.5
Buffalo H1	63.7

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 fo each 0.5% Mn over 1%; $1 for each 0.045% max. P)

NiagaraFalls,N.Y. P15	$88.0
Keokuk,Iowa, Openhearth & Fdry, frt. allowed K2	92.5
Keokuk, OH & Fdry., 12½ lb piglets, 16% Si, frt. allowed K2	95.5
Wenatchee,Wash., OH & Fdry., frt. allowed K2	92.5

CHARCOAL PIG IRON, Gross Ton

(Low phos semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles,Tenn. T3	$66.0

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$57.0
Steelton,Pa. B2	60.0
Philadelphia delivered	63.5
Troy,N.Y. R2	60.0

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Semifinished and Finished Steel Products

Mill prices quoted under GCPR as reported to STEEL, July 17, 1952; cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ...$79.00
Munhall,Pa. U5 ...52.00
Seattle S24 ...73.00

INGOTS, Alloy (NT)
Detroit R7 ...$54.00
Fontana,Calif. K1 ...80.00
Houston S5 ...62.00
Midland,Pa. C18 ...54.00
Munhall,Pa. U5 ...54.00
Seattle S24 ...80.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 ...$56.00
Clairton,Pa. U5 ...56.00
Ensley,Ala. T2 ...56.00
Fairfield,Ala. T2 ...56.00
Fontana,Calif. K1 ...75.00
Gary,Ind. U5 ...56.00
Johnstown,Pa. B2 ...56.00
Lackawanna,N.Y. B2 ...56.00
Munhall,Pa. U5 ...56.00
So.Chicago,Ill. U5 ...56.00
So.Duquesne,Pa. U5 ...56.00

Carbon,Forging (NT)
Bessemer,Pa. U5 ...$66.00
Buffalo R2 ...66.00
Canton,O. R2 ...66.00
Clairton,Pa. U5 ...66.00
Cleveland R2 ...66.00
Conshohocken,Pa. A3 ..73.00
Detroit R7 ...69.00
Ensley,Ala. T2 ...66.00
Fairfield,Ala. T2 ...66.00
Fontana,Calif. K1 ...85.00
Gary,Ind. U5 ...66.00
Geneva,Utah C11 ...66.00
Houston S5 ...74.00
Johnstown,Pa. B2 ...66.00
Lackawanna,N.Y. B2 ..66.00
LosAngeles B3 ...85.00
Munhall,Pa. U5 ...66.00
Seattle B3 ...85.00
So.Chicago R2,U5,W14 ..66.00
So.Duquesne,Pa. U5 ..66.00
So.SanFrancisco B3 ..85.00

Alloy, Forging (NT)
Bethlehem,Pa. B2 ...$70.00
Buffalo R2 ...70.00
Canton,O. R2 ...70.00
Canton,O.(29) T7 ...66.00
Conshohocken,Pa. A3 ..77.00
Detroit R7 ...73.00
Fontana,Calif. K1 ...89.00
Gary,Ind. U5 ...70.00
Houston S5 ...78.00
Ind.Harbor,Ind. Y1 ...70.00
Johnstown,Pa. B2 ...70.00
Lackawanna,N.Y. B2 ..70.00
LosAngeles B3 ...90.00
Massillon,O. R2 ...70.00
Midland,Pa. C18 ...70.00
Munhall,Pa. U5 ...70.00
So.Chicago R2,U5,W14 ..70.00
So.Duquesne,Pa. U5 ..70.00
Struthers,O. Y1 ...70.00
Warren,O. C17 ...70.00

ROUNDS, SEAMLESS TUBE (NT)
Canton,O. R2 ...$82.00
Cleveland R2 ...82.00
Fontana,Calif. K1 ...103.00
Gary,Ind. U5 ...82.00
Massillon,O. R2 ...82.00
So.Chicago,Ill. R2 ...82.00
So.Duquesne,Pa. U5 ..82.00

SHEET BARS (NT)
Fontana,Calif. K1 ...$89.00

SKELP
Aliquippa,Pa. J5 ...$3.45
Munhall,Pa. U5 ...3.35
Warren,O. R2 ...3.35
Youngstown R2, U5 ...3.35

WIRE RODS
Alton,Ill. L1 ...4.40
AlabamaCity,Ala. R2 ..4.10
Buffalo W12 ...4.10
Cleveland A7 ...4.10
Donora,Pa. A7 ...4.10
Fairfield,Ala. T2 ...4.10
Fontana,Calif. K1 ...4.90
Houston S5 ...4.50
Johnstown,Pa. B2 ...4.10
Joliet,Ill. A7 ...4.10
LosAngeles B3 ...4.90
Minnequa,Colo. C10 ...4.35
Monessen,Pa. P7 ...4.30
No.Tonawanda,N.Y. B11..4.10
Pittsburg,Calif. C11 ...4.75
Portsmouth,O. P12 ...4.30
Roebling,N.J. R5 ...4.20
So.Chicago,Ill. R2 ...4.10
SparrowsPoint,Md. B2..4.20
Sterling,Ill.(1) N15 ...4.10
Struthers,O. Y1 ...4.10
Torrance,Calif. C11 ...4.90
Worcester,Mass. A7 ...4.40

SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ...4.45
Lackawanna,N.Y. B2 ..4.45
Munhall,Pa. U5 ...4.45
So.Chicago,Ill. U5 ...4.45

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ..3.60
Aliquippa,Pa. J5 ...3.65
Bessemer,Ala. T2 ...3.65
Bethlehem,Pa. B2 ...3.70
Clairton,Pa. U5 ...3.65
Fairfield,Ala. T2 ...3.65
Fontana,Calif. K1 ...4.25
Gary,Ind. U5 ...3.65
Geneva,Utah C11 ...3.65
Houston S5 ...4.05
Ind.Harbor,Ind. I-2 ...3.65
Johnstown,Pa. B2 ...3.70
KansasCity,Mo. S5 ...4.25
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 ...4.25
Minnequa,Colo. C10 ...4.10
Munhall,Pa. U5 ...3.65
Niles,Calif.(22) P1 ...4.85
Phoenixville,Pa. P4 ...5.90
Portland,Oreg. O4 ...4.50
Seattle B3 ...4.30
So.Chicago,Ill. U5 W14..3.65
So.SanFrancisco B3 ...4.20
Torrance,Calif. C11 ...4.25
Werton,W. Va. W6 ...3.90

Alloy Stand. Shapes
Clairton,Pa. U5 ...4.35
Fontana,Calif. K1 ...5.55
Munhall,Pa. U5 ...4.35
So.Chicago,Ill. U5 ...4.35

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 ...5.50
Bessemer,Ala. T2 ...5.50
Bethlehem,Pa.(14) B2 ..5.50
Clairton,Pa. U5 ...5.50
Fairfield,Ala. T2 ...5.50
Fontana,Calif. K1 ...6.10
Gary,Ind. U5 ...5.50
Geneva,Utah C11 ...5.50
Ind.Harbor,Ind. I-2 ...5.50
Ind.Harbor,Ind. Y1 ...6.00
Johnstown,Pa. B2 ...5.50
Lackawanna,N.Y.(14)B2 5.50
LosAngeles B3 ...6.05
Munhall,Pa. U5 ...5.50
Seattle B3 ...6.10
So.Chicago,Ill. U5 ...5.50
So.SanFrancisco B3 ...6.00
Struthers,O. Y1 ...6.00

Wide Flange
Bethlehem,Pa. B2 ...3.70
Clairton,Pa. U5 ...3.65
Fontana, Calif. K1 ...5.55
Lackawanna,N.Y. B2 ..3.70
Munhall,Pa. U5 ...3.65
So.Chicago,Ill. U5 ...3.65

H.S., L.A. Wide Flange
Aliquippa,Pa. J5 ...5.50
Lackawanna,N.Y. B2 ..5.50
Munhall,Pa. U5 ...5.45
So.Chicago,Ill. U5 ...5.45

BEARING PILES
Munhall,Pa. U5 ...3.65
So.Chicago,Ill. U5 ...3.65

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 ...5.65
Bessemer,Ala. T2 ...5.65
Clairton,Pa. U5 ...5.65
Cleveland J5, R2 ...5.65
Conshohocken,Pa. A3 ..5.90
Fairfield,Ala. T2 ...5.65
Fontana,Calif.(30) K1..6.25
Gary,Ind. U5 ...5.65
Geneva,Utah C11 ...5.65
Ind.Harbor,Ind. I-2 ...5.65
Ind.Harbor,Ind. Y1 ...6.15
Johnstown,Pa. B2 ...5.65
Munhall,Pa. U5 ...5.65
Pittsburgh J5 ...5.65
Seattle B3 ...6.35
Sharon,Pa. S3 ...5.70
So.Chicago,Ill. U5 ...5.65
SparrowsPoint,Md. B2 ..5.65
Warren,O. R2 ...5.65
Youngstown Y1 ...6.15

PLATES, Open-Hearth Alloy
Claymont,Del. C22 ...4.85
Coatesville,Pa. L7 ...5.25
Conshohocken,Pa. A3 ..5.05
Fontana,Calif. K1 ...5.70
Gary,Ind. U5 ...4.75
Johnstown,Pa. B2 ...4.75
Munhall,Pa. U5 ...4.75
Sharon,Pa. S3 ...5.20
So.Chicago,Ill. U5 ...4.75
SparrowsPoint,Md. B2 ..4.75

FLOOR PLATES
Cleveland J5 ...4.75
Conshohocken,Pa. A3 ..4.75
Ind.Harbor,Ind. I-2 ...4.75
Munhall,Pa. U5 ...4.75
So.Chicago,Ill. U5 ...4.75

PLATES, Ingot Iron
Ashland,c.l. (15) A10 .3.95
Ashland,l.c.l. (15) A10..4.45
Cleveland,c.l. R2 ...4.30
Warren,O.,c.l. R2 ...4.30

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..3.70
Aliquippa,Pa. J5 ...3.70
Ashland,Ky. (15) A10 ..3.70
Bessemer,Ala. T2 ...3.70
Clairton,Pa. U5 ...3.70
Claymont,Del. C22 ...4.15
Cleveland J5, R2 ...3.70
Coatesville,Pa. L7 ...4.15
Conshohocken,Pa. A3 ..4.15
Fairfield,Ala. T2 ...3.70
Fontana,Calif.(30) K1 ..4.30
Gary,Ind. U5 ...3.70
GraniteCity,Ill. G4 ...4.40
Geneva,Utah C11 ...3.70
Harrisburg,Pa. C5 ...6.30
Houston S5 ...4.10
Ind.Harbor,Ind. I-2, Y1.3.70
Johnstown,Pa. B2 ...3.70
Lackawanna,N.Y. B2 ..3.70
Minnequa,Colo. C10 ...4.50
Munhall,Pa. U5 ...3.70
Pittsburgh J5 ...3.70
Seattle B3 ...4.60
Sharon,Pa. S3 ...3.95
So.Chicago,Ill. U5 W14..3.70
SparrowsPoint,Md. B2 ..3.70
Steubenville,O. W10 ...3.70
Warren,O. R2 ...3.70
Weirton,W.Va. W6 ...4.00
Youngstown R2, U5, Y1.3.70

PLATES, Carbon A.R.
Fontana,Calif. K1 ...5.45
Geneva,Utah C11 ...4.85

PLATES, Wrought Iron
Economy,Pa. B14 ...8.60

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ..3.70
Aliquippa,Pa. J5 ...3.70
Alton,Ill. L1 ...4.15
Atlanta,Ga. A11 ...4.25
Bessemer,Ala. T2 ...3.70
Buffalo R2 ...3.70
Canton,O. R2 ...3.70
Clairton,Pa. U5 ...3.70
Cleveland R2 ...3.70
Detroit R7 ...3.85
Emeryville,Calif. J7 ...4.45
Fairfield,Ala. T2 ...3.70
Fontana,Calif. K1 ...4.40
Gary,Ind. U5 ...3.70
Houston S5 ...4.10
Ind.Harbor,Ind. I-2, Y1.3.70
Johnstown,Pa. B2 ...3.70
KansasCity,Mo. S5 ...4.30
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 ...4.40
Milton,Pa. B6 ...4.55
Minnequa,Colo. C10 ...4.15
Niles,Calif. P1 ...5.05
N.Tonawanda,N.Y. B11..3.70
Pittsburg,Calif. C11 ...4.40
Pittsburgh J5 ...3.70
Portland,Oreg. O4 ...4.65
Seattle B3, N14 ...4.45
So.Chicago R2, U5, W14.3.70
So.Duquesne,Pa. U5 ...3.70
So.SanFran.,Cal. B3 ...4.45
Struthers,O. Y1 ...3.70
Torrance,Calif. C11 ...4.40
Weirton,W.Va. W6 ...3.85
Youngstown R2, U5 ...3.70

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 ...3.70
Atlanta A11 ...4.25
Johnstown,Pa. B2 ...3.70
Lackawanna,N.Y. B2 ..3.70
Niles,Calif. P1 ...5.05
Portland,Oreg. O4 ...4.65
SanFrancisco S7 ...4.85

BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 ...3.90

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 ...4.30
Buffalo R2 ...4.30
Canton,O. R2 ...4.30
Canton,O.(29) T7 ...3.95
Clairton,Pa. U5 ...4.30
Detroit R7 ...4.45
Ecorse,Mich. G5 ...4.65
Fontana,Calif. K1 ...5.35
Gary,Ind. U5 ...4.30
Houston S5 ...4.70
Ind.Harbor,Ind. I-2, Y1.4.30
Johnstown,Pa. B2 ...4.30
KansasCity,Mo. S5 ...4.90
Lackawanna,N.Y. B2 ..4.30
LosAngeles B3 ...5.35
Massillon,O. R2 ...4.30
Midland,Pa. C18 ...4.30
So.Chicago R2, U5, W14.4.30
So.Duquesne,Pa. U5 ...4.30
Struthers,O. Y1 ...4.30
Warren,O. C17 ...4.30
Youngstown U5 ...4.30

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 ...4.55
Gary,Ind. U5 ...4.55
Youngstown U5 ...4.55

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy
Aliquippa,Pa. J5 ...5.55
Bessemer,Ala. T2 ...5.55
Bethlehem,Pa. B2 ...5.55
Clairton,Pa. U5 ...5.55
Cleveland R2 ...5.55
Fairfield,Ala. T2 ...5.55
Fontana,Calif. K1 ...6.60
Gary,Ind. U5 ...5.55
Ind.Harbor,Ind. I-2 ...5.55
IndianaHarbor,Ind. Y1 ..6.05
Johnstown,Pa. B2 ...5.55
Lackawanna,N.Y. B2 ..5.55
LosAngeles B3 ...6.25
Pittsburgh J5 ...5.55
Seattle B3 ...6.30
So.Duquesne,Pa. U5 ...5.55
So.SanFrancisco B3 ...6.30
Struthers,O. Y1 ...6.05
Youngstown U5 ...5.55

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ...4.55
BeaverFalls,Pa. M12, R2 4.55
Buffalo B5 ...4.60
Camden,N.J. P13 ...5.00
Carnegie,Pa. C12 ...4.55
Chicago W18 ...4.55
Cleveland A7, C20 ...4.55
Detroit P17 ...4.70
Donora,Pa. A7 ...4.55
Elyria,O. W8 ...4.55
FranklinPark,Ill. N5 ...4.55
Gary,Ind. R2 ...4.55
GreenBay,Wis. F7 ...4.55
Hammond,Ind. L2, M13.4.55
Hartford,Conn. R2 ...5.10
Harvey,Ill. B5 ...4.55
LosAngeles R2 ...6.00
Mansfield,Mass. B5 ...5.10
Massillon,O. R2, R8 ...4.55
Monaca,Pa. S17 ...4.55
Newark,N.J. W18 ...5.00
Plymouth,Mich. P5 ...4.80
Pittsburgh J5 ...4.55
Putnam,Conn. W18 ...5.10
Readville,Mass. C14 ...5.10
St.Louis,Mo. M5 ...4.95
So.Chicago,Ill. W14 ...4.55
SpringCity,Pa.(5) K3 ...5.00
Struthers,O. Y1 ...4.55
Waukegan,Ill. A7 ...4.55
Youngstown F3, Y1 ...4.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ...5.40
BeaverFalls,Pa. M12 ...5.40
Bethlehem,Pa. B2 ...5.40
Buffalo B5 ...5.40
Camden,N.J. P13 ...5.80
Canton,O. R2 ...5.40
Canton,O.(29) T7 ...4.90
Carnegie,Pa. C12 ...5.40
Chicago W18 ...5.40
Cleveland A7 ...5.45
Cleveland C20 ...5.40
Detroit P17 ...5.55
Donora,Pa. A7 ...5.45
Elyria,O. W8 ...5.40
Gary,Ind. R2 ...5.40
Hammond,Ind. L2, M13.5.40
Hartford,Conn. R2 ...5.85
Harvey,Ill. B5 ...5.40
Lackawanna,N.Y. B2 ..5.40
Mansfield,Mass B5 ...5.85
Massillon,O. R2, R8 ...5.40
Midland,Pa. C18 ...5.40
Monaca,Pa. S17 ...5.40
Newark,N.J. W18 ...5.75
Plymouth,Mich. P5 ...5.60
So.Chicago,Ill. R2, W14.5.40
Struthers,O. Y1 ...5.40
Warren,O. C17 ...5.40
Waukegan,Ill. A7 ...5.45
Worcester,Mass. A7 ...5.75
Youngstown F3, Y1 ...5.40

RAIL STEEL BARS
ChicagoHts.(3,4) C2 ...4.75
ChicagoHts.(3,4) I-2 ...4.75
Franklin,Pa.(3,4) F5 ...4.75
FortWorth,Tex.(26) T4..4.85
Huntngtn,W.Va.(3) W7..5.50
Marion,O.(3) P11 ...4.75
Moline,Ill.(3) R2 ...3.80
Tonawanda(3,4) B12 ...4.75
Williamsport(3) S19 ...5.00
Williamsport(4) S19 ...5.10

BARS, Wrought Iron
Dover,N.J.(Staybolt)U1 15.00
Dover(Eng.Bolt) U1 ...13.50
Dover(Wrght.Iron) U1. 12.25
Economy,Pa.(S.R.) B14..9.60
Economy,Pa.(D.R.)B14 11.90
Economy(Staybolt) B14 12.20
McK.Rks.(Staybolt)L5 .14.50
McK.Rks.(S.R.) L5 ...9.60
McK.Rks.(D.R.) L5 ...13.00

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ..3.70
Atlanta A11 ...4.25
Buffalo R2 ...3.70
Cleveland R2 ...3.70
Emeryville,Calif. J7 ...4.45
Fairfield,Ala. T2 ...3.70
Fontana,Calif. K1 ...4.40
Gary,Ind. U5 ...3.70
Houston S5 ...4.10
Ind.Harbor,Ind. I-2, Y1.3.70
Johnstown,Pa. B2 ...3.70
KansasCity,Mo. S5 ...4.30
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 ...4.40
Milton,Pa. B6 ...4.55
Minnequa,Colo. C10 ...4.50
Niles,Calif. P1 ...5.05
Pittsburg,Calif. C11 ...4.30
Pittsburgh J5 ...3.70
Portland,Oreg. O4 ...4.65
Seattle B3, N14 ...4.55
So.Chicago,Ill. R2 ...3.70
So.Duquesne,Pa. U5 ...3.70
So.SanFrancisco B3 ...4.45
SparrowsPoint,Md. B2 ..3.70
Struthers,O. Y1 ...3.70
Torrance,Calif. C11 ...4.40
Youngstown R2, U5 ...3.70

BARS, Reinforcing
(Fabricated; to Consumers)
Huntington,W.Va. W7 ..5.50
Johnstown, ¼-1" B2 ...4.75
LosAngeles B3 ...5.45
Marion,O. P11 ...5.00
Seattle B3, N14 ...5.55
So.SanFrancisco B3 ...5.45
SparrowsPt. ¼-1" B2 ..4.75
Williamsport,Pa. S19 ...5.10

SHEETS, Hot-Rolled Steel
(18 gage and heavier)
AlabamaCity,Ala. R2 ..3.60
Ashland,Ky.(8) A10 ...3.60
Butler,Pa. A10 ...3.60
Cleveland J5, R2 ...3.60
Conshohocken,Pa. A3 ..4.00
Detroit M1 ...4.40
Ecorse,Mich.(8) G5 ...3.80
Fairfield,Ala. T2 ...3.60
Fontana,Calif. K1 ...4.55
Gary,Ind. U5 ...3.60
Geneva,Utah C11 ...3.70
GraniteCity, Ill. G4 ...4.30
Ind.Harbor,Ind. I-2, Y1.3.60
Irvin,Pa. U5 ...3.60
Lackawanna,N.Y. B2 ..3.60
Munhall,Pa. U5 ...3.60
Niles,O. N12 ...5.25
Pittsburg,Calif. C11 ...4.30
Pittsburgh J5 ...3.60
Sharon,Pa. S3 ...4.00
So.Chicago,Ill. W14 ...3.60
SparrowsPoint,Md. B2 ..3.60
Steubenville,O. W10 ...3.60
Torrance,Calif. C11 ...4.30
Warren,O. R2 ...3.60
Weirton,W.Va. W6 ...3.60
WestLeechburg,Pa. A4 ..3.75
Youngstown U5, Y1 ...3.60

SHEETS, H.R. (19 gage)
AlabamaCity,Ala. R2 ..4.75
Dover,O. R1 ...5.65
Ind.Harbor,Ind. I-2 ...5.40
Mansfield,O. E6 ...5.65
Niles,O. N12 ...5.75
Torrance,Calif. C11 ...5.40

SHEETS, H.R. (14 ga., heavier) High-Strength Low-Alloy
Cleveland J5, R2 ...5.40
Conshohocken,Pa. A3 ...5.65
Ecorse,Mich. G5 ...5.95
Fairfield,Ala. T2 ...5.40
Fontana,Calif. K1 ...6.35
Gary,Ind. U5 ...5.40
Ind.Harbor,Ind. I-2 ...5.40
Ind.Harbor,Ind. Y1 ...5.90
Irvin,Pa. U5 ...5.40
Lackawanna(35) B2 ...5.40
Pittsburgh J5 ...5.40
Sharon,Pa. S3 ...5.40
So.Chicago,Ill. U5 ...5.40
SparrowsPoint(36) B2 ..5.40
Warren,O. R2 ...5.40
Weirton,W.Va. W6 ...5.75
Youngstown U5 ...5.40
Youngstown Y1 ...5.90

SHEETS, Cold-Rolled High-Strength Low-Alloy
Cleveland J5, R2 ...6.65
Ecorse,Mich. G5 ...7.10
Fontana,Calif. K1 ...7.50
Gary,Ind. U5 ...6.55
IndianaHarbor,Ind. Y1 ..7.05
IndianaHarbor,Ind. I-2..6.55
Irvin,Pa. U5 ...6.55
Lackawanna(37) B2 ...6.55
Pittsburgh J5 ...6.55
SparrowsPoint(38) B2 ..6.55
Warren,O. R2 ...6.55
Weirton,W.Va. W6 ...6.90
Youngstown Y1 ...7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.35
Cleveland J5, R2	4.35
Ecorse,Mich. G5	4.55
Fairfield,Ala. T2	4.35
Follansbee,W.Va. F4	5.35
Fontana,Calif. K1	5.30
Gary,Ind. U5	4.35
GraniteCity,Ill. G4	5.05
Ind.Harbor,Ind. I-2, Y1	4.35
Irvin,Pa. U5	4.35
Lackawanna,N.Y. B2	4.35
Middletown,O. A10	4.35
Pittsburg,Calif. C11	5.30
Pittsburgh J5	4.35
SparrowsPoint,Md. B2	4.35
Steubenville,O. W10	4.35
Warren,O. R2	4.35
Weirton,W.Va. W6	4.35
Youngstown Y1	4.35

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2	4.80
Ashland,Ky.(8) A10	4.80
Canton,O. R2	4.80
Dover,O. R1	5.50
Fairfield,Ala. T2	4.80
Gary,Ind. U5	4.80
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. I-2	4.80
Irvin,Pa. U5	4.80
Kokomo,Ind.(13) C16	5.20
MartinsFerry,O. W10	4.80
Niles,O. N12	6.00
Pittsburg,Calif. C11	5.55
SparrowsPoint,Md. B2	4.80
Steubenville,O. W10	4.80
Torrance,Calif. C11	5.55
Weirton,W.Va. W6	4.80

SHEETS, Galvanized No. 10, High-Strength Low-Alloy

Irvin,Pa. U5	7.20
SparrowsPoint(39) B2	6.75

SHEETS, Galvannealed Steel

Canton,O. R2	5.35
Irvin,Pa. U5	5.35
Kokomo,Ind.(13) C16	5.75
Niles,O. N12	6.55

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	5.05
Middletown,O. A10	5.05

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.65
Niles,O. R2 (28)	5.65
Weirton,W.Va. W6	5.50

SHEETS, Zinc Alloy

Ind.Harbor,Ind. I-2	5.70

SHEETS, Drum Body

Pittsburg,Calif. C11	4.30
Torrance,Calif. C11	4.30

SHEETS, Well Casing

Fontana,Calif. K1	5.10

BLUED Stock, 29 ga.

Yorkville,O. W10	6.80
Follansbee,W.Va.(23) F4	6.85

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.65
Cleveland R2	4.65
Gary,Ind. U5	4.65
GraniteCity,Ill. G4	5.35
Ind.Harbor,Ind. I-2	4.65
Irvin,Pa. U5	4.65
Middletown,O. A10	4.65
Youngstown Y1	4.65

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$6.25
Fairfield,Ala. T2	6.35
Gary,Ind. U5	6.25
GraniteCity,Ill. G4	6.45
Ind.Harbor,Ind. I-2, Y1	6.25
Irvin,Pa. U5	6.25
Niles,O. R2	6.25
Pittsburg,Calif. C11	7.00
SparrowsPoint,Md. B2	6.35
Warren,O. R2	6.25
Weirton,W.Va. W6	6.25
Yorkville,O. W10	6.25

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4	5.85
Gary,Ind. U5	5.85
GraniteCity,Ill. G4	6.05
Ind.Harbor,Ind. Y1	5.85
Irvin,Pa. U5	5.85
Yorkville,O. W10	6.15

SHEETS, Culvert No. 16

	Cu Alloy	Cu Fe
Ashland,Ky. A10	5.60	...
Canton,O. R2	5.65	6.10
Fairfield,Ala. T2	5.60	5.85
Gary,Ind. U5	5.60	5.85
IndianaHarbor I-2	5.60	5.85
Irvin,Pa. U5	5.60	5.85
Kokomo,Ind. C16	6.25	...
MartinsFy,O. W10	5.60	5.85
Pittsburg,Cal. C11	6.35	...
SparrowsPt. B2	5.60	...
Torrance,Cal. C11	6.35	...

SHEETS, Culvert, No. 16 Pure Iron

Ashland,Ky. A10	5.85
Fairfield,Ala. T2	5.85

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland,Ky.(8) A10	3.85
Cleveland R2	4.20
Ind.Harbor,Ind. I-2	3.85
Warren,O. R2	4.20

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2	4.95
Middletown,O. A10	4.85
Warren,O. R2	4.95

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	5.05
Canton,O. R2	5.55

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	5.30
Middletown,O. A10	5.30

SHEETS, ALUMINIZED

Butler,Pa. A10	8.15

TINPLATE, American Coke (Base Box)

	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.45	$8.70
Fairfield,Ala. T2	8.55	8.80
Gary,Ind. U5	8.45	8.70
Ind.Har. I-2, Y1	8.45	8.70
Irvin,Pa. U5	8.45	8.70
Pitts.,Cal. C11	9.20	9.45
Sp.Pt.,Md. B2	8.55	8.80
Warren,O. R2	8.45	8.70
Weirton,W.Va.W6	8.45	8.70
Yorkville,O. W10	8.45	8.70

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$7.60
Gary,Ind. U5	7.50
Irvin,Pa. U5	7.50
SparrowsPoint,Md. B2	7.60
Yorkville,O. W10	7.50

SHEETS, LT. Coated Ternes, 6 lb

Yorkville,O. W10	$8.40

SHEET, Mfg. Ternes, 8 lb (Commercial Quality)

Gary,Ind. U5	$9.50
Yorkville,O. W10	9.50

SHEET, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va.W10	5.20
Gary,Ind. U5	5.20
Mansfield,O. E6	6.05
Middletown,O. A10	5.20
Niles,O. N12	6.00
Weirton,W.Va. W6	5.20

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.60

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5	9.50

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2	5.30
Conshohocken,Pa. A3	5.55
Ecorse,Mich. G5	5.95
Fairfield,Ala. T2	5.30
Fontana,Calif. K1	6.20
Gary,Ind. U5	5.30
Ind.Harb.,Ind. I-2	5.30
IndianaHarbor,Ind. Y1	5.80
Lackawanna,N.Y. B2	4.95
LosAngeles(25) B3	6.05
Seattle B3	6.30
Sharon,Pa. S3	5.40
So.SanFrancisco(25) B3	6.05
SparrowsPoint,Md. B2	4.95
Warren,O. R2	5.30
Weirton,W.Va. W6	5.75
Youngstown Y1	5.80
Youngstown U5	5.30

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland J5	6.70
Cleveland A7	6.55
Dover,O. G6	7.30
Fontana,Calif. K1	6.95
Lackawanna,N.Y. B2	6.40
Sharon,Pa. S3	6.55
SparrowsPoint,Md. B2	6.40
Warren,O. R2	6.55
Weirton,W.Va. W6	7.20
Youngstown Y1	7.05

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.50
Alton,Ill. L1	3.95
Ashland,Ky.(8) A10	3.50
Atlanta A11	4.05
Bessemer,Ala. T2	3.50
Bridgeprt,Conn.(10) S15	4.00
Buffalo(27) R2	3.50
Butler,Pa. A10	3.50
Carnegie,Pa. S18	4.00
Conshohocken,Pa. A3	3.90
Detroit M1	4.40
Ecorse,Mich. G5	3.80
Fairfield,Ala. T2	3.50
Fontana,Calif. K1	4.75
Gary,Ind. U5	3.50
Houston,Tex. S5	4.90
Ind.Harbor,Ind. I-2, Y1	3.50
Johnstown,Pa.(25) B2	3.50
KansasCity,Mo.(9) S5	4.10
Lackawanna,N.Y.(32) B2	3.50
LosAngeles B3	4.25
Milton,Pa. B6	4.35
Minnequa,Colo. C10	4.55
NewBritain(10) S15	4.00
No.Tonawanda,N.Y. B11	3.50
Pittsburg,Calif. C11	4.25
Riverdale,Ill. A1	3.50
SanFrancisco S7	4.85
Seattle B3, N14	4.50
Sharon,Pa. S3	4.00
So.Chicago,Ill. W14	3.50
So.SanFrancisco B3	4.25
SparrowsPoint,Md. B2	3.50
Torrance,Calif. C11	4.25
Warren,O. R2	3.50
Weirton,W.Va. W6	3.60
WestLeechburg,Pa. A4	3.75
Youngstown U5, Y1	3.50

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	5.45
Carnegie,Pa. S18	5.85
Fontana,Calif. K1	6.70
Gary,Ind. U5	5.50
Houston,Tex. S5	5.90
KansasCity,Mo. S5	6.10
Midland,Pa. C18	5.85
NewBritn,Conn.(10) S15	5.45
Sharon,Pa. S3	5.85
Youngstown U5	5.50

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	5.50
Berea,O. C7	6.60
Bridgeprt,Conn.(10) S15	5.35
Butler,Pa. A10	4.65
Cleveland A7, J5	4.65
Dearborn,Mich. D3	5.60
Detroit D2	5.60
Detroit M1	5.45
Dover,O.(40) G6	5.50
Ecorse,Mich. G5	4.85
Follansbee,W.Va. F4	4.65
Fontana,Calif. K1	6.30
FranklinPark,Ill.(40) T6	4.90
Ind.Harbor,Ind. I-2	4.90
Lackawanna,N.Y. B2	4.65
LosAngeles C1	6.40
Mattapan,Mass. T6	5.50
Middletown,O. A10	4.65
NewBritain(10) S15	5.35
NewCastle,Pa. B4	5.35
NewCastle,Pa.(40) E5	5.25
NewHaven,Conn. D2	5.85
NewHaven,Conn. A7	5.15
Pawtucket,R.I. R3	6.00
Pawtucket,R.I.(21) N8	5.85
Riverdale,Ill.(40) A1	4.90
Rome,N.Y. R6	5.10
Sharon,Pa. S3	5.35
SparrowsPoint,Md. B2	4.65
Trenton,N.J. R5	6.00
Wallingford,Conn. W2	5.85
Warren,O.(40) T5	5.25
Warren,O. R2	4.65
Weirton,W.Va. W6	4.65
Youngstown C8 (40)	5.25
Youngstown Y1	4.65

STRIP, Electro Galvanized

Dover,O. G6	5.50
Warren,O. T5	5.25
Weirton,W.Va. W6	4.65
Youngstown C8	5.25

STRIP, Cold-Finished, Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Berea,O. C7	...	6.80	7.40	9.35	11.65
Bridgeport,Conn.(10) S15	5.35	6.80	7.40	9.35	11.65
Bristol,Conn. W1	...	...	7.70	9.65	....
Carnegie,Pa. S18	...	6.80	7.40	9.35	11.65
Cleveland A7	4.65	6.45	7.40	9.35	11.65
Dearborn,Mich. D3	5.60	7.05	7.65	...	....
Detroit D2	5.60	6.65	7.25	....	....
Dover,O. G6	5.50	6.80	7.40	9.35	11.65
FranklinPark,Ill. T6	5.00	6.60	7.55	9.50	11.80
Harrison,N.J. C18	...	...	7.70	9.65	11.95
Mattapan,Mass. T6	5.50	6.75	7.70	9.65	11.95
NewBritn.,Conn.(10) S15	5.35	6.80	7.40	9.35	11.65
NewCastle,Pa. B4	5.35	6.80	7.40	9.35	....
NewCastle,Pa. E5	5.50	6.80	7.40	9.35	11.65
NewHaven,Conn. D2	5.85	6.75	7.35	...	....
NewYork W3	...	7.10	7.70	9.65	11.95
Pawtucket,R.I. N8:					
Cleve.orPitts.Base	...	6.80	7.40	9.35	11.65
Worcester,Mass.,Base	5.85	7.10	7.70	9.65	11.95
Sharon,Pa. S3	5.35	6.80	7.40	9.35	11.65
Trenton,N.J. R5	...	7.10	7.70	9.65	11.95
Wallingford,Conn. W2	5.85	6.75	7.35	9.30	11.60
Weirton,W.Va. W6	5.35	6.80	7.40	9.35	11.65
Worcester,Mass. A7	4.95	6.75	7.70	9.65	11.95
Worcester,Mass. T6	5.50	6.75	7.70	9.65	11.95
Youngstown C8	...	6.80	7.40	9.35	11.65
Spring Steel (Tempered)					
Trenton,N.J. R5	...	...	10.30	12.50	15.35
Harrison,N.J. C18	...	...	10.30	12.50	15.35
NewYork W3	...	...	10.30	12.50	15.35

TIN PLATE, Electrolytic (Base Box)

	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.15	$7.40	$7.80
Fairfield,Ala. T2	7.25	7.50	7.90
Gary,Ind. U5	7.15	7.40	7.80
GraniteCity,Ill. G4	7.35	7.60	8.00
Ind.Harbor,Ind. I-2, Y1	7.15	7.40	7.80
Irvin,Pa. U5	7.15	7.40	7.80
Niles,O. R2	7.15	7.40	7.80
Pittsburg,Calif. C11	7.90	8.15	8.55
SparrowsPoint,Md. B2	7.25	7.50	7.90
Weirton,W.Va. W6	7.15	7.40	7.80
Yorkville,O. W10	7.15	7.40	7.80

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut Lengths ½c lower)

	Field	Armature	Electric	Motor	Dynamo
BeechBottom W10 (cut lengths)	...	...	7.25	8.50	9.30
Brackenridge,Pa. A4	...	...	7.75	9.00	9.80
GraniteCity,Ill. G4 (cut lengths)	...	...	7.95	9.20	...
Ind.Harbor,Ind. I-2	6.95	7.25	(34)	...	...
Mansfield,O. E6 (cut lengths)	7.10	7.25	7.75	9.00	9.80
Niles,O. N12 (cut lengths)	...	...	6.75	7.25	...
Vandergrift,Pa. U5	...	7.25	7.75	9.00	9.80
Warren,O. R2	6.95	7.25	7.75	9.00	9.80
Zanesville,O. A10	...	7.25	7.75	9.00	9.80

SHEETS, SILICON (22 Ga. Base) Coils (Cut Lengths ½c lower)

Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	9.85	10.40	11.10	11.90
Brackenridge,Pa. A4	10.35	....	....	....
Vandergrift,Pa. U5	10.35	10.90	11.60	12.40
Warren,O. R2	10.35	....	....	....
Zanesville,O. A10	10.35	10.90	11.60	12.40

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)

	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	....	....	14.75	15.25
Vandergrift,Pa. U5	12.90	13.75	14.75	15.25

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Boiardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Co.
B14 A. M. Byers Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div. Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Corp.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div. Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div. Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10)	$15 10.75
Carnegie,Pa. S18	....10.60
Cleveland A7	....10.00
Dover,O. G6	....10.50
Fontana,Calif. K1	....11.65
Harrison,N.J. C18	....10.60
Midland,Pa. C18	....10.60
NewBritn,Conn.(10)	S15 10.75
Pawtucket,R.I.(11)	N8.10.75
Pawtucket,R.I.(12)	N8.11.05
Sharon,Pa. S3	....10.60
Worcester,Mass. A7	...10.30
Youngstown C8	....10.60

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	....3.75
Warren,O. R2	....4.10

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	....5.25

TIGHT COOPERAGE HOOP

Atlanta A11	....4.05
Riverdale,Ill. A1	....3.90
Sharon,Pa. S3	....4.15
Youngstown U5	....3.75

WIRE, Tire Bead

Bartonville,Ill.(1) K4	..10.90
Monessen,Pa. P16	....11.40
Roebling,N.J. R5	....11.55

WIRE, Merchant Quality

(6 to 8 gage)	An'ld.	Galv.
AlabamaCity R2	5.70	5.95
Aliquippa J5	5.70	6.15
Atlanta A11	5.95	6.40
Bartonville(19)K4	5.70	6.15
Buffalo W12	4.85	...
Cleveland A7	5.70	6.15
Crawfordsville M8	5.95	6.40
Donora,Pa. A7	5.70	6.15
Duluth,Minn. A7	5.70	6.15
Fairfield T2	5.70	6.15
Houston,Tex. S5	6.10	6.55
Johnstown B2	5.70	6.15
Joliet,Ill. A7	5.70	6.15
KansasCy,Mo. S5	6.30	6.75
Kokomo C16	5.80	6.05
LosAngeles B3	6.65	...
Minnequa C10	5.95	6.45
Monessen P7	5.95	6.40
Palmer W12	5.15	...
Pitts.,Calif. C11	6.65	6.80
Prtsmth.(18)P12	6.10	6.60
Rankin A7	5.70	6.15
So.Chicago R2	5.70	5.95
So.S.Fran. C10	6.65	7.10
SparrowsPt. B2	5.80	6.25
Sterling,Ill.(1)N15	5.70	6.15
Struthers,O. Y1	5.70	6.15
Torrance,Cal. C11	6.65	...
Worcester A7	6.00	6.45

ROPE WIRE

	(A)	(B)
Alton,Ill. L1	8.65	8.90
Bartonville,Ill. K4	8.55	8.80
Buffalo W12	8.55	8.80
Fostoria,O. S1	8.85	9.10
Johnstown,Pa. B2	8.55	8.80
Monessen,Pa. P16	8.55	8.80
Monessen,Pa. P7	8.80	9.05
Muncie,Ind. I-7	8.75	9.00
Palmer,Mass. W12	8.85	9.10
Portsmouth,O. P12	8.56	8.80
Roebling,N.J. R5	8.85	9.10
SparrowsPt. B2	8.65	8.90
Struthers,O. Y1	8.55	8.80
Worcester J4, T6	8.85	9.10

(A) Plow and Mild Plow.
(B) Improved Plow.

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	..4.85
Aliquippa,Pa. J5	....4.85
Atlanta A11	....5.10
Alton,Ill. L1	....5.05
Bartonville,Ill.(1) K4	..4.85
Buffalo W12	....4.85
Chicago W13	....5.10
Cleveland A7, C20	....4.85
Crawfordsville,Ind. M8	..5.10
Donora,Pa. A7	....4.85
Duluth,Minn. A7	....4.85
Fairfield,Ala. T2	....4.85
Fostoria,O.(24) S1	....5.35
Houston S5	....5.25
Johnstown,Pa. B2	....4.85
Joliet,Ill. A7	....4.85
KansasCity,Mo. S5	....5.45
Kokomo,Ind. C16	....4.95
LosAngeles B3	....5.80
Minnequa,Colo. C10	....5.10
Monessen,Pa. P7	....5.10
Newark 6-8 ga. I-1	....5.50
No.Tonawanda B11	....4.85
Palmer,Mass. W12	....5.15
Pittsburg,Calif. C11	....5.80
Portsmouth,O. P12	....5.25
Rankin,Pa. A7	....4.85
So.Chicago,Ill. R2	....4.85
So.SanFrancisco C10	....5.80
SparrowsPoint,Md. B2	..4.95
Sterling,Ill.(1) N15	....4.85
Struthers,O. Y1	....4.85
Torrance,Calif. C11	....5.80
Waukegan,Ill. A7	....4.85
Worcester,Mass. A7, T6	5.15

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	....6.20
Buffalo W12	....6.35
Cleveland A7	....5.85
Crawfordsville,Ind. M8	..6.20
Detroit D2	....6.20
Dover,O. G6	....6.20
Fostoria,O. S1	....6.00
Kokomo,Ind. C16	....5.70
FranklinPark,Ill. T6	...6.20
Massillon,O. R8	....5.85
Monessen,Pa. P16	....5.85
Monessen,Pa. P7	....6.10
NewHaven,Conn. D2	...6.50
Pawtucket,R.I.(12)	N8..6.85
Trenton,N.J. R5	....6.15
Worcester,Mass. A7	....6.15
Worcester,Mass. T6	....6.50
Worcester,Mass. W12	...6.65

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	....8.50
Monessen,Pa. P16	....8.50
Muncie,Ind. I-7	....8.70
Roebling,N.J. R5	....8.80
SparrowsPoint,Md. B2	..8.60
Johnstown,Pa. B2	....8.50

WIRE (16 gage)	An'l'd. Stone	Galv. Stone
Aliquippa J5	....10.15	12.15
Bartonville(1)K4	..10.25	11.95
Cleveland A7	....10.25	12.15
Crawfrdsville M8	.10.30	12.00
Fostoria,O. S1	..10.40	13.00
Johnstown B2	...10.25	12.15
Kokomo C16	....10.25	11.95
Minnequa C10	...10.40	12.40
Palmer,Mass. W12	.10.25	12.15
Pitts.Cal. C11	...10.60	12.50
Prtsmth.(18) P12	.10.55	12.30
SparrowsPt. B2	..10.35	12.25
Waukegan A7	....10.25	12.15

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	....6.25
Alton,Ill. L1	....6.45
Bartonville,Ill.(1) K4	...6.25
Buffalo W12	....6.25
Cleveland A7	....6.25
Donora,Pa. A7	....6.25
Duluth,Minn. A7	....6.25
Fostoria,O. S1	....6.25
Johnstown,Pa. B2	....6.25
LosAngeles B3	....7.20
Milbury,Mass.(12) N6	..8.05
Monessen,Pa. P7, P16	...6.25
Muncie,Ind. I-7	....6.45
Palmer,Mass. W12	....6.55
Pittsburg,Calif. C11	....7.20
Roebling,N.J. R5	....6.55
Portsmouth,O. P12	....6.25
So.Chicago,Ill. R2	....6.25
So.SanFrancisco C10	..7.20
SparrowsPoint,Md. B2	..6.35
Struthers,O. Y1	....6.25
Trenton,N.J. A7	....6.55
Waukegan,Ill. A7	....6.25
Worcester A7, T6, W12	..6.55
Worcester,Mass. J4	....6.75

WIRE, Fine & Weaving (8"Coils)

Bartonville,Ill.(1) K4	..8.90
Buffalo W12	....8.90
Chicago W13	....8.90
Cleveland A7	....8.90
Crawfordsville,Ind. M8	..8.95
Fostoria,O. S1	....8.90
Johnstown,Pa. B2	....8.90
Kokomo,Ind. C16	....8.90
Monessen,Pa. P16	....8.90
Muncie,Ind. I-7	....9.10
Palmer,Mass. W12	....9.20
Portsmouth,O. P12	....8.90
Roebling,N.J. R5	....9.20
Waukegan,Ill. A7	....8.90
Worcester,Mass. A7, T6	9.20

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	...137
Aliquippa,Pa. J5	141
Atlanta A11	144
Bartonville,Ill.(19) K4	...144
Crawfordsville,Ind. M8	..146
Donora,Pa. A7	141
Duluth,Minn. A7	141
Fairfield,Ala. T2	141
Houston,Tex. S5	149
Johnstown,Pa B2	141
Joliet,Ill. A7	141
KansasCity,Mo. S5	153
Kokomo,Ind. C16	143
Minnequa,Colo. C10	147
Monessen,Pa. P7	146
Pittsburg,Calif. C11	161
Portsmouth,O.(18) P12	..148
Rankin,Pa. A7	141
So.Chicago,Ill. R2	137
So.SanFran.,Calif. C10	..161
SparrowsPoint,Md. B2	..143
Sterling,Ill.(1) N15	141

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	...123
Atlanta A11	126
Bartonville,Ill.(19) K4	..123
Crawfordsville,Ind. M8	..132
Donora,Pa. A7	123
Duluth,Minn. A7	123
Fairfield,Ala. T2	123
Joliet,Ill. A7	123
KansasCity,Mo. S5	135
Kokomo,Ind. C16	125
Minnequa,Colo. C10	128
Pittsburg,Calif. C11	147
So.Chicago,Ill. R2	123
So.SanFran.,Calif. C10	..147
SparrowsPoint,Md. B2	..125
Sterling,Ill.(1) N15	123

WIRE, Upholstery Spring

Aliquippa,Pa. J5	....5.90
Alton,Ill. L1	....6.10
Buffalo W12	....5.90
Cleveland A7	....5.90
Donora,Pa. A7	....5.90
Duluth,Minn. A7	....5.90
Johnstown,Pa. B2	....5.90
LosAngeles B3	....6.85
Monessen,Pa. P7, P16	..5.90
NewHaven,Conn. A7	...6.20
Palmer,Mass. W12	....6.20
Pittsburg,Calif. C11	...6.85
Portsmouth,O. P12	....5.90
Roebling,N.J. R5	....6.20
So.Chicago,Ill. R2	....5.90
So.SanFrancisco C10	...6.85
SparrowsPoint,Md. B2	..6.00
Torrance,Calif. C11	...6.85
Trenton,N.J. A7	....6.20
Waukegan,Ill. A7	....5.90
Worcester,Mass. A7	....6.20

WOVEN FENCE, 9-15½Ga.

	Col.
AlabamaCity,Ala. R2	...127
Ala.City,Ala.,17-18ga. R2	214
Aliquippa,Pa.9-14½ga.J5	131
Atlanta A11	134
Bartonville,Ill.(19) K4	..131
Crawfordsville,Ind. M8	..133
Donora,Pa. A7	131
Duluth,Minn. A7	131
Fairfield,Ala. T2	131
Houston,Tex. S5	139
Johnstown,Pa. B2	131
Johnstown,17ga.,6" B2	..205
Johnstown,17ga.,4" B2	...208
Joliet,Ill. A7	131
KansasCity,Mo. S5	143
Kokomo,Ind. C16	133
Minnequa,Colo. C10	139
Monessen,Pa. P7	136
Pittsburg,Calif. C11	154
Portsmouth,O.(18) P12	..138
Rankin,Pa. A7	131
So.Chicago,Ill. R2	127
Sterling,Ill.(1) N15	131

FENCE POSTS

ChicagoHts.,Ill. C2	140
Duluth,Minn. A7	125
Franklin,Pa. F5	140
Huntington,W.Va. W7	..140
Johnstown,Pa. B2	140
Marion,O. P11	140
Minnequa,Colo. C10	130
Moline,Ill. R2	136
So.Chicago,Ill. R2	140
Tonawanda,N.Y. B12	...140
Williamsport,Pa. S19	...150

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	....9.85
Lebanon,Pa.(31) B2	....9.85
Minnequa,Colo. C10	....9.85
Pittsburgh O3, P14	....9.85
Seattle B3	....10.35

NAILS & STAPLES, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	...118
Aliquippa,Pa.(13) J5	118
Atlanta A11	121
Bartonville,Ill.(19) K4	..118
Chicago,Ill. W13	118
Cleveland A9	125
Crawfordsville,Ind. M8	..122
Donora,Pa. A7	118
Duluth,Minn. A7	118
Fairfield,Ala. T2	118
Galveston,Tex. D7	126
Houston,Tex. S5	126
Johnstown,Pa. B2	118
Joliet,Ill. A7	118
KansasCity,Mo. S5	130
Kokomo,Ind. C16	120
Minnequa,Colo. C10	123
Monessen,Pa. P7	124
Pittsburg,Calif. C11	137
Portsmouth,O. P12	124
Rankin,Pa. A7	118
So.Chicago,Ill. R2	118
SparrowsPoint,Md. B2	..120
Sterling,Ill.(1) N15	118
Torrance,Calif. C11	138
Worcester,Mass. A7	124

NAILS, Cut (100 lb keg)

To dealers (33)	
Conshohocken,Pa. A3	..$7.35
Wheeling,W.Va. W10	...7.35

TIE PLATES

Fairfield,Ala. T2	....4.50
Gary,Ind. U5	....4.50
Ind.Harbor,Ind. I-2	....4.50
Lackawanna,N.Y. B2	..4.50
Minnequa,Colo. C10	....4.50
Pittsburg,Calif. C11	....4.65
Seattle B3	....4.65
Steelton,Pa. B2	....4.50
Torrance,Calif. C11	....4.65

JOINT BARS

Bessemer,Pa. U5	....4.70
Fairfield,Ala. T2	....4.70
Ind.Harbor,Ind. I-2	....4.70
Joliet,Ill. U5	....4.70
Lackawanna,N.Y. B2	..4.70
Minnequa,Colo. C10	....4.70
Steelton,Pa. B2	....4.70

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	..6.15
KansasCity,Mo. S5	....6.40
Lebanon,Pa. B2	....6.15
Minnequa,Colo. C10	....6.15
Pittsburgh J5	....6.15
Seattle B3	....6.65
So.Chicago,Ill. R2	....6.15
Struthers,O. Y1	....6.15
Youngstown R2	....6.15

AXLES

Ind.Harbor,Ind. S13	....5.60
Johnstown,Pa. B2	....5.60

RAILS	Std. No. 1	Std. No. 2	Std. All No. 2	Tee Rails 60 lb Under
Bessemer,Pa. U5	3.60	3.50	3.55	4.00
Ensley,Ala. T2	3.60	3.50	...	4.00
Fairfield,Ala. T2	...	...	...	4.00
Gary,Ind. U5	3.60	3.50	3.55	...
Huntington,W.Va. W7	...	...	...	5.00
Ind.Harbor,Ind. I-2	3.60	3.50	3.55	...
Johnstown,Pa. B2	...	...	...(16)	4.00
Lackawanna,N.Y. B2	3.60	3.50	...	4.00
Minnequa,Colo. C10	3.60	3.50	...	4.50
Steelton,Pa. B2	3.60	3.50	...	...
Williamsport,Pa. S19	...	...	...	4.75

TOOL STEEL

Grade	$ per lb
Regular Carbon	0.230
Extra Carbon	0.270
Special Carbon	0.325
Oil Hardening	0.350
5% Cr Hot Work	0.350
Hi-Carbon-Cr	0.635

Grade by Analysis

W	Cr	V	Co	
18	4	1	....	1.505
18	4	2	....	1.650
20.25	4.25	1.6	12.25	3.535-3.675
19	4	2	7	2.460
18.25	4.25	1	4.75	2.125
18	4	2	9	2.445-2.45
13.5	4	3	....	1.6025

W	Cr	V	Mo	
6.4	4.5	19.5	5	0.96-0.965
6	4	3	6	1.190
1.5	4	1	8.5	0.810

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

Footnotes:
(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) Philadelphia del.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.50c for 17 Ga. & heavier.
(14) Also wide flange beams.
(15) ½" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pitts. base
(20) 0.25c off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 28 Ga. 36" wide.
(24) Deduct 0.20c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing, mill lengths, to fabricators; to consumers, 5.60c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Subject to 10% increase.
(30) Sheared: add 0.35c for universal mill.
(31) Not annealed.
(32) Rd. or square edge.
(33) To jobbers, deduct 20c.
(34) 7.25c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter: 60" & narrower.
(38) 14 gage & lighter: 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035": 0.035" and heavier, 0.25c higher.

Key to Producers

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M9 Midvale Co.
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.

N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng-HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Div.
N14 Nrthwst. Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.

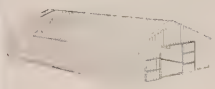
O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield S.&I. Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S24 Seidelhuber Steel
T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
U1 Ulster Iron Works
U4 Universal Cyclops Steel
U5 United States Steel Co.
V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div. International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet&Tube

HERE'S SIMPLE ARITHMETIC on PREFABS:

PREFAB BUILDING +
TRAMRAIL CRANE =

1 Low Cost
2 Good Construction
3 Efficient
Overhead
Materials
Handling

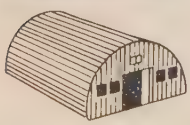


Butler Prefabricated Buildings are especially well suited for overhead cranes. Their cross-section makes it possible for a crane to span the entire width and provide service for all of the floor area. Their sturdy construction enables them to support heavy loads. The Cleveland Tramrail crane here is hand-propelled with chain hoist. It has 4000 lbs. capacity. The building is 40' x 100'.

Do you need a building for warehousing or manufacturing? One at low cost? Of good durable construction? Equipped with overhead materials handling facility? Then look into prefabricated metal buildings provided with a Cleveland Tramrail Crane. This combination has proven to be economical and efficient for a number of companies.

Prefabs will usually support crane loads from 1000 to 6000 lbs. depending upon type and size building. They can be made any length and by joining units can be made of various widths.

Hand-propelled cranes with electric hoists are generally most practical in prefabs. Because Cleveland Tramrail cranes and carriers roll so easily, very little effort is required to propel them manually. While chain hoists are satisfactory, but slow, most users find electric hoists desirable to do the heavy lifting.



Cleveland Tramrail cranes have proven satisfactory in quonset buildings. This 40' x 100' building, erected in 1947, has a crane runway 19' above the floor. The 24 ft. span crane is hand-propelled with electric hoist. Capacity is 2000 lbs.

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CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
7871 East 284th Street, Wickliffe, Ohio

CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

STANDARD PIPE, T & C

BUTTWELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Black A	Black B	Black C	Galvanized D	Galvanized E	Galvanized F
⅛	5.5c	0.24	34.0	32.0	...	+0.5	+2.5	...
¼	6.0	0.42	28.5	26.5	...	+3.5	+5.5	...
⅜	6.0	0.57	23.5	21.5	...	+10.0	+12.0	...
½	8.5	0.85	36.0	34.0	35.0	12.0	10.0	11.0
¾	11.5	1.18	39.0	37.0	38.0	16.0	14.0	15.0
1	17.0	1.68	41.5	39.5	40.5	19.5	17.5	18.5
1¼	23.0	2.28	42.0	40.0	41.0	20.5	18.5	19.5
1½	27.5	2.78	42.5	40.5	41.5	21.5	19.5	20.5
2	37	3.68	43.0	41.0	42.0	22.0	20.0	21.0
2½	58.5	5.82	43.5	41.5	42.5	23.0	21.0	22.0
3	76.5	7.62	43.5	41.5	42.5	23.0	21.0	22.0

Column A: Etna, Pa N2 and 36⅓ % on 3½", 4"; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 3½ points lower on ⅛", 1½ points lower on ¼", and 2 points lower on ⅜", W10; Sharon, Pa. M6, 1 point higher on ⅛", 2 points lower on ¼" and ⅜"; Wheatland, Pa. W9, 2 points lower on ⅛", ¼", ⅜". Following make ½" and larger: Lorain, O. N3; Youngstown R2 and 36¼ % on 3½" and 4"; Youngstown Y1; Aliquippa, Pa. J5; Fontana, Calif. K1 quotes 11½ points lower on ½" and larger continuous weld and 24% on 3½" and 4".
Columns B & E: Sparrows Point, Md. B2.
Columns C & F: Indiana Harbor, Ind., Y1; Alton, Ill., (Gary base) 2 points lower discount L1.
Column D: Butler, Pa. F6, ⅛-⅜"; Benwood, W. Va. W10, except plus 4% on ⅛", plus 6% on ¼", plus 13% on ⅜" and 15.5% on 3½", 4"; Sharon, Pa. M6, plus 2.5 on ⅛", 1 point lower on ½", ¾", 1½ points lower on 1" and 1¼", 2 points lower on 1½", 2", 2½" and 3"; Wheatland, Pa. W9, add 2 points on ⅛", ¼", ⅜", 1 point lower on ¾", 2 points lower on 1", 1½", 2", 1½ points lower on 1¼", 2½", 3". Etna, Pa. N2 and 15.5% on 3½", 4". Following quote only on ½" and larger: Lorain, O. N3; Youngstown R2, and 15½ % on 3½" and 4"; Youngstown Y1, Aliquippa, Pa. J5 quotes 1 point lower on ¾", 2 points lower on 1", 1½", 2", 1½ points lower on 1¼", 2½" and 3".

SEAMLESS AND ELECTRIC WELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Seamless Black A	Seamless Galv. B	Elec. Weld Black C	Elec. Weld Galv. D
2	37.0c	3.68	29.5	8.0	29.5	8.0
2½	58.5	5.82	32.5	11.5	32.5	11.5
3	76.5	7.62	32.5	11.5	32.5	11.5
3½	92.0	9.20	34.5	13.5	34.5	13.5
4	$1.09	10.89	34.5	13.5	34.5	13.5
5	1.48	14.81	37.0	16.0	37.0	16.0
6	1.92	19.18	37.0	16.0	37.0	16.0

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.
Column B: Aliquippa J5 quotes 1½ pts lower on 2", 1 pt lower on 2½-6-in.; Lorain N3; Youngstown Y1.
Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft., mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	13.45	16.47	15.36	15.36
1¼	13	16.09	19.71	15.61	18.19
1½	13	17.27	21.15	17.25	20.30
1¾	13	19.29	23.62	19.62	23.09
2	13	21.62	26.48	21.99	25.86
2¼	13	24.35	29.82	24.50	28.84
2¼	12	26.92	32.97	26.98	31.76
2½	12	29.65	36.32	29.57	34.76
2¾	12	32.11	39.33	31.33	36.84
3	12	34.00	41.64	32.89	38.70

CLAD STEELS

(Cents per pound)

Cladding Stainless	Plates — Carbon Base 10%	Plates — Carbon Base 20%	Strip — Cold-Rolled Carbon Base 10%	Strip — Cold-Rolled Carbon Base Both Sides	Sheets — Carbon Base 10%	Sheets — Carbon Base 20%	Sheets — Cu Base Both Sides
302 ...	....	....	....	....	19.75	26.24–27.50	77.00
304 ...	25.00	29.50	....	....	24.50	27.50–27.77	77.00
309 ...	30.50	35.00	....	....	....	....	....
310 ...	36.50	41.00	....	....	....	....	144.00
316 ...	29.50	34.00	....	....	26.00	35.92–36.50	....
317 ...	34.50	39.00	....	....	....	....	....
318 ...	33.50	38.00	....	....	....	....	....
321 ...	26.50	31.00–32.00	....	....	23.00	33.00	111.00
347 ...	27.50	32.00	....	....	24.00	33.50–33.83	130.00
405 ...	21.25	27.75	....	....	....	....	....
410 ...	20.75	27.25	....	....	....	....	....
Nickel .	33.55	45.15	41.00	54.00	....	....	....
Inconel.	41.23	54.18	....	....	....	....	165.00
Monel..	34.93	46.28	....	....	....	....	....
Copper*	....	....	23.70†	29.65‡	....	....	....

* Deoxidized. † 20.20c for hot-rolled. ‡ 26.40c for hot-rolled. Production points for carbon base products: Stainless plates, sheet, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel, copper-clad strip, Carnegie, Pa., S18. Production point for copper-base sheets is Carnegie, Pa. A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:
- ½-in. & smaller diam. 15
- ⅝-in. & ⅞-in. 18.5
- 1-in. and larger ... 17.5

Longer than 6 in.:
- All diams. 14

Lag bolts, all diams.:
- 6 in. and shorter ... 23
- over 6 in. long 21

Ribbed Necked Carriage 18.5
Blank 34
Plow 34
Step, Elevator, Tap and Sleigh Shoe 21
Tire bolts 21
Boiler & Fitting-Up Bolts 31

NUTS

H.P. & C.P. Square:	Reg. Hvy.
½-in. & smaller	15 / 15
⅝-in. & ⅞-in.	12 / 6.5
1-in.-1½-in.	9 / 1
1⅛-in. & larger	7.5 / 1
H.P. Hex.:	
½-in. & smaller	26 / 22
⅝-in. & ⅞-in.	16.5 / 6.5
1-in.-1½-in.	12 / 2
1⅛-in. & larger	8.5 / 2
C. P. Hex.:	
½-in. & smaller	26 / 22
⅝-in. & ⅞-in.	23 / 17.5
1-in. & 1½-in.	19.5 / 12
1⅛-in. & larger	12 / 6.5

SEMIFINISHED NUTS

American Standard
(Per cent off list for less than case or keg quantities)

	Reg. Hvy.
½-in. & smaller	35 / 28.5
⅝-in. & ⅞-in.	29.5 / 22
1-in.-1½-in.	24 / 15
1⅛-in. & larger	13 / 8.5
	Light
⅞-in. & smaller	35
1-in. to 1½-in.	28.5
1¾-in. to 1½-in.	26

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish .....48 & 10
Plated finishes .....31 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged: per cent off list)

6 in. or shorter:
- ⅝-in. & smaller 42
- ¾-in. through 1 in. . 34

Longer than 6 in.:
- ⅝-in. & smaller 26
- ¾-in. through 1 in. . 4

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam x 6 in. and shorter 38
1 in. and smaller diam. x over 6 in. 26

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller ... 35
¼-in. diam. & larger .. 16
N.F. thread, all diams. 10

RIVETS

F.o.b. midwestern plants
Structural ½-in., larger 7.85c
⅞-in. under ..... 36 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers—List to list-plus-$1

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 70%, $43; 60%, $40.
Imported, net ton, duty paid, metallurgical grade, $33-$35.

ELECTRODES

(Threaded, with nipples, unboxed f.o.b. plant)

GRAPHITE

Inches — Diam.	Length	Cents per lb
17,18,20	60,72	17.85
8 to 16	48,60,72	17.85
7	48,60	19.57
6	48,60	20.95

CARBON

35,40	110	8.03
30	65,84,110	8.03
24	72 to 104	8.03
17 to 20	34,90	8.03

STAINLESS STEEL

Type	Sheets	C.R. Strip	Bars Wire Structurals
301...	41.00	34.00	31.25
302...	41.25	36.75	31.50
303...	43.25	40.25	34.00
304...	43.25	38.75	33.00
309...	56.00	55.00	44.75
316...	57.00	59.00	49.25
321...	49.25	48.25	37.00
347...	53.75	52.25	41.50
410...	36.50	30.50	25.75
416...	37.00	37.00	26.25
420...	44.00	47.00	31.25
430...	39.00	31.00	26.25
501...	27.50	26.00	14.25
502...	28.50	27.00	15.25

Balt., Types 301-347 sheet, except 303 and 309 E2.
Brackenridge, Pa., sheets A4 quotes slight variations on Types 301-347.
Bridgeville, Pa., bars, wire, sheets & strip U4.
Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502, A10.
Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502 S18.
Cleveland, strip A7.
Detroit, strip M1 quotes 34.00c on Type 301; 36.50c, 302; 38.50c, 304; 58.50c, 316; 52.00c, 347; 30.50c, 410; 31.00c, 430.
Dunkirk, N. Y., bars, wire A4 quotes slight variations on Types 301-347.
Duquesne, Pa., bars U5.
Fort Wayne, Ind., bars and wire, except Types 501 & 502 J6 quotes slight variations on Types 301-347.
Gary, Ind., sheets except Type 416 U5.
Harrison, N. J., strip and wire C18.
Massillon, O., all items, R2.
McKeesport, Pa., strip, Type 410; bars & wire, Types 410 through 430 and 31.25c on Type 302, 33.75c on 303, 32.75c on 304, 48.75c on 316, 36.75c on 321, 41.25c on 347 F2.
McKeesport, Pa., bars, sheets except Type 416 U5.
Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.
Midland, sheets & strip C18.
Munhall, Pa., bars U5.
Muncie, Ind., wire I-7 quotes types 302, 304, 430.
Pittsburgh, sheets C18.
Reading, Pa., strip except 34.25c on Type 301 and 56.00c on 309; bars, except 31.50c on Type 301 and 45.25c on 309 C4.
Sharon, Pa., strip, except Types 303, 309, 416, 501, 502 and 34.25c on Type 301 S3.
So. Chicago, Ill., bars & structurals U5.
Syracuse, N. Y., bars, wire & structurals C18.
Titusville, Pa., bars U4.
Wallingford, Conn., strip W2 quotes 0.25c higher.
Washington, Pa., bars, sheets & strip, except 0.25c higher on Type 301 J3.
Washington, Pa., Types 301 through 347 sheets & strip except 303, 309; 316 sheets 62.00c, strip 64.00c W4
Watervliet, N. Y., structurals & bars A4 quotes variations on Types 301-347.
Waukegan, bars & wire A7.
West Leechburg, Pa., strip, A4 quotes slight variations on Types 301-347.
Youngstown, strip except Types 303, 309, 316, 416, 501 and 502 and 34.25c on Type 301 C8.

COAL CHEMICALS

Spot, cents per gallon, ovens
Pure benzol 30.00-35.00
Toluol, one deg..26.00-33.00
Industrial xylol ..25.00-33.50

Per ton bulk ovens
Sulphate of ammonia.$32-$45

Cents per pound, ovens
Phenol. 40 (carlots, non-returnable drums) ...17.25

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted.)

	Cents
Sponge iron: 98+ % Fe, annealed.	18.00
Unannealed	14.50
Swedish, c.i.f. New York, in bags..8.85-9.95	
Electrolytic iron: Annealed, 99.5% Fe.	42.50
Unannealed (99 + % Fe)	36.50
Unannealed, 99 + % Fe (minus 325 mesh)	53.50
Powder Flakes	48.50
Carbonyl Iron: 97.9-99.8% size 5 to 10 microns ..83.00-148.00	
Aluminum: Carlots, freight allowed	29.50
Atomized, 500 lb drums, freight allowed	32.50
Antimony, 500 lb lots .	71.00
Brass, 20-ton lots.28.25-32.00	
Bronze, 10-ton lots 51.25-60.00	
Phosphor-Copper, 20-ton lots	50.00
Copper: Electrolytic	37.25
Reduced	34.75
Lead	22.50
Magnesium 75.00-85.00	
Manganese: Minus 100 mesh	57.00
Minus 35 mesh	52.00
Minus 200 mesh	62.00
Nickel unannealed	86.00
Nickel-Silver 5-ton lots	44.50
Silicon	38.50
Solder (plus cost of metal)	8.50
Stainless Steel, 302 ...	83.00
Zinc, 10-ton lots..20.00-28.00	
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh: 1000 lb and over ...	5.85
Less than 1000 lb ..	6.00
Molybdenum: 99.9%, minus 200 mesh	3.24
Chromium, electrolytic 99% Cr min.	3.50

METALLURGICAL COKE

Price net ton

BEEHIVE OVENS

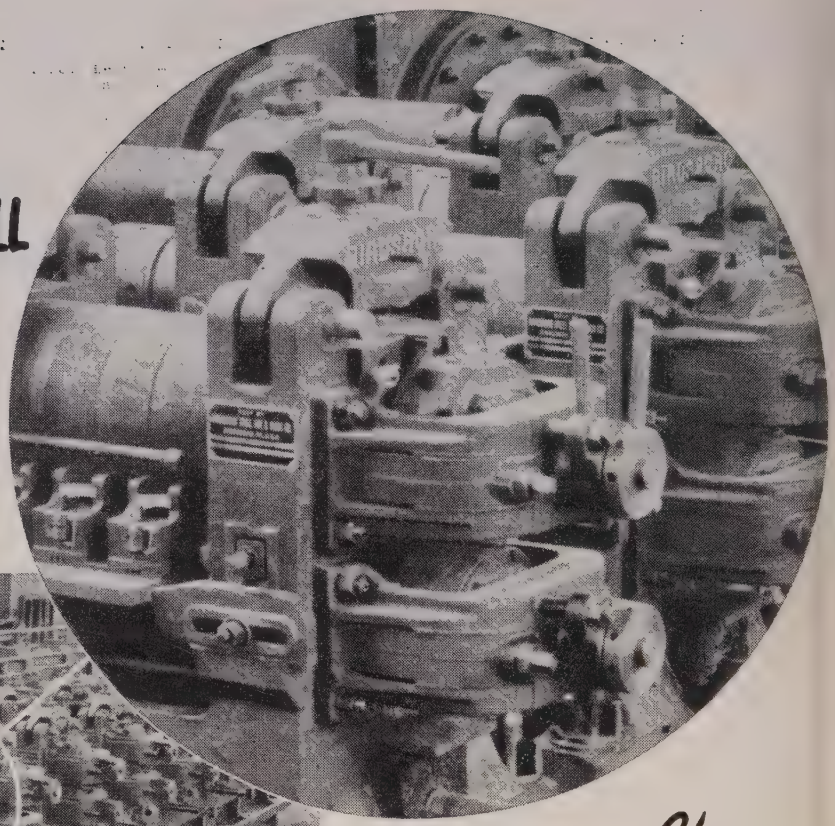
Connellsvil.fur. .$14.50-15.00
Connellsvil.fdy. ..16.50-17.50
New River foundry ... 21.30
Wise county, foundry.. 15.95
Wise county, furnace.. 15.20

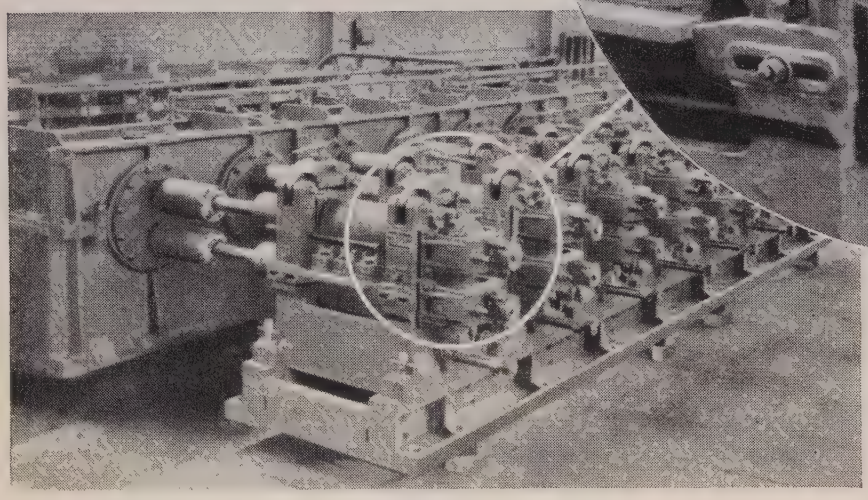
OVEN FOUNDRY COKE

Kearney, N. J. ovens.$22.75
Everett, Mass., ovens
New England, del. ..*24.80
Chicago ovens 23.00
Chicago, del. 24.50
Terre Haute, ovens ... 22.50
Milwaukee, ovens 23.75
Indianapolis, ovens ... 22.75
Chicago, del. 26.62
Cincinnati, del. 25.85
Detroit, del. 27.05
Ironton, O., ovens 22.50
Cincinnati, del. 25.12
Painesville, O., ovens. 24.00
Cleveland, del. 25.82
Erie, Pa., ovens 23.50
Birmingham, ovens .. 20.30
Cincinnati, del. 25.23
Philadelphia, ovens ... 22.70
NevilleIsland,Pa.,ovens 23.00
Swedeland, Pa., ovens. 22.60
St. Louis, ovens
St. Louis, del. 25.40
Portsmouth, O., ovens 22.50
Cincinnati, del. 25.12
Detroit, ovens 24.00
Detroit, del. 25.00
Buffalo, del. 26.58
Flint, del. 26.73
Pontiac, del. 25.56
Saginaw, del. 27.08

*Or within $4.55 freight zone from works.

NEW ROLLER-BEARING END ROLL *Reduces Downtime*





Steps Up Production

**End roll adjustment patent applied for.*

● The greatest improvement in end roll mechanism made in years . . . permits more accurate and faster end roll adjustment; more flexible operation and minimum maintenance.

The roller bearing is locked to the end of the roll, but may be changed in a jiffy—need not be removed for dressing or until the roll is scrapped. When rolls need changing, patented tilting caps swing up and rolls are raised through top of housing without disassembling end roll adjustment.*

Heavy C clamps secure the bearing housing to the frame with self-aligning surface contact for easy vertical adjustment without wear of clamping surface.

This advanced design typifies the Skill and experience of Birdsboro engineers. We'll be glad to apply our engineering service to your mill machinery problems anytime you say the word.

MM-20-51-R

BIRDSBORO

STEEL FOUNDRY & MACHINE CO.

Birdsboro, Penna.

STEEL MILL MACHINERY

Designers and Builders of:

Steel Mill Machinery • Crushing Machinery • Rolls
Hydraulic Presses • Special Machinery • Steel Castings

Offices in:
BIRDSBORO, PA.
and
PITTSBURGH, PA.

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, for delivery within switching limits, subject to extras.)

	SHEETS			STRIP		BARS				PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140§[5]	Standard Structural Shapes	Carbon	Floor
New York (city)	6.28	7.24	8.42	6.50	...	6.52	7.33	9.29	6.38	6.76	8.01
JerseyCty(c'try)	6.09	6.94	8.12	6.36	...	6.22	7.03	8.99	6.08	6.46	7.71
Boston (city)	6.45	7.23	8.44	6.40	...	6.30	6.82	10.80	6.45	6.65	7.89
Boston (c'try)	6.25	7.03	8.24	6.20	...	6.10	6.61	10.60	6.25	6.45	7.69
Phila. (city)	6.09	7.05	8.25	6.29	7.19	6.35	7.19	10.50	6.11	6.38	7.33
Phila. (c'try)	5.84	6.80	8.00	6.04	6.94	6.10	6.94	10.25	5.86	6.13	7.08
Balt. (city)	5.74	7.04	8.27	6.27	...	6.25	6.87	...	6.37	6.33	7.61
Balt. (c'try)	5.54	6.84	8.07	6.07	...	6.05	6.67	...	6.17	6.13	7.41
Norfolk, Va.	6.78	...	...	...	...	6.04	7.30	...	6.30	6.30	7.15
Richmond, Va.	5.74	6.57	8.38	6.14	...	5.91	6.59	...	6.72	6.86	8.00
Wash. (w'hse)	6.05	7.26	8.49	6.50	...	6.50	7.26	...	6.60	6.65	7.86
Buffalo (del.)	5.74	6.52	8.31	6.06	...	5.72	6.65	10.72††	6.02	6.18	7.55
Buffalo (w'hse)	5.54	6.32	8.11	5.86	...	5.52	6.45	10.52††	5.82	5.98	7.35
Pitts. (w'hse)	5.54	6.32	7.70	5.59	6.90	5.47	6.15	10.10††	5.65	5.65	6.89
Detroit (w'hse)	5.74	6.49	8.34	5.78	7.15	5.76	6.60	10.37††	6.12	6.17	7.23
Cleveland (del.)	5.74	6.52	8.01	5.85	7.14	5.81	6.35	10.41††	6.15	6.02	7.39
Cleve. (w'hse)	5.54	6.32	7.81	5.65	6.94	5.61	6.15	10.21††	5.95	5.82	7.19
Cincin. (w'hse)	5.87	6.39	8.17	5.79	...	5.77	6.66	10.52††	6.12	6.17	7.31
Chicago (city)	5.74	6.52	7.90	5.69	...	5.67	6.25	10.30††	5.85	5.85	7.09
Chicago (w'hse)	5.54	6.32	7.70	5.49	...	5.47	6.05	10.10††	5.65	5.65	6.89
Milwau. (city)	5.90	6.68	8.06	5.85	...	5.83	6.51	10.37††	6.01	6.01	7.25
Milwau. (c'try)	5.70	6.48	7.86	5.65	...	5.63	6.31	10.17††	5.81	5.81	7.05
St. Louis (del.)	6.04	6.80	8.20	5.99	...	5.97	6.65	10.60††	6.25	6.25	7.49
St. L. (w'hse)	5.84	6.60	8.00	5.79	...	5.77	6.45	10.40††	6.05	6.05	7.29
Kans. City(city)	6.40	7.20	8.40	6.35	...	6.35	7.20	...	6.50	6.60	7.80
Kans.Cty(w'hse)	6.20	7.00	8.20	6.15	...	6.15	7.00	...	6.30	6.40	7.60
Birm'hm (city)	5.75	6.55	6.90[2]	5.70	...	5.70	7.53	...	5.85	6.10	8.23
Birm'hm(w'hse)	5.60	6.40	6.75[2]	5.55	...	5.55	7.53	...	5.70	5.95	8.23
Los Ang. (city)	6.50	8.30[3]	9.50	6.60	10.65	6.45	8.05	11.50††	6.50	6.50	8.75
L. A. (w'hse)	6.30	8.10[3]	9.30	6.40	10.45	6.25	7.85	11.30††	6.30	6.30	8.55
Seattle-Tacoma	7.01	7.84	9.50	7.45	...	6.70	8.89	10.35	6.52	6.86	8.73
SanFran.(w'hse)	6.64	7.88[3]	9.10[3]	6.42	...	6.32	8.20	11.30	6.30	6.43	8.50

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes extra for 10 gage; § as rolled; ** 16 gage; †† as annealed; §§ 15 gage. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [3]—450 to 1499 lb; [4]—3500 lb and over; [5]—1000 to 1999 lb.

Ores

Lake Superior Iron Ore

(1951 contract prices; 1952 prices not established)

Gross ton, 51½% (natural), lower lake ports. After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950, in applicable lake vessel rates, upper lake rail, freights, dock handling charges and taxes thereon.

Old range bessemer	$8.70
Old range nonbessemer	8.55
Mesabi bessemer	8.45
Mesabi nonbessemer	8.30
High phosphorus	8.30

Eastern Local Ore

Cents per unit del., E. Pa.

Foundry and basic 56-62% concentrates contract	17.00

Foreign Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%: Spot	nom.
Long-term contract	20.00-24.00
North African hematites (spot)	26.00-28.00
Brazilian iron ore, 68-69% (spot)	30.00-31.00

Tungsten Ore

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$65.00
Domestic scheelite, mines	65.00

Manganese Ore

Manganese, 48% nearby, $1.18-1.22 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 85c-87c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African	
48% 2.8:1	$39.00-42.00
48% 3:1	44.00-45.00
48% no ratio	30.00-32.00
South African Transvaal	
44% no ratio	$27.00-28.00
48% no ratio	34.00-35.00
Brazilian	
44% 25:1 lump	nom.
Rhodesian	
45% no ratio	$29.00
48% no ratio	31.50-32.00
48% 3:1 lump	50.00-51.00
Domestic—rail nearest seller	
48% 3:1	$39.00

Molybdenum

Sulphide concentrates per lb, molybdenum content, mines	$1.00

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 21.75c per lb of contained Cr c.l., packed 22.65c, ton lot 23.80c, less ton 25.20c. Delivered. Spot, and 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%) Contract, carload, lump, bulk, max. 0.03% C 33.60c per lb of contained Cr, 0.04% C 31.50c, 0.06% C 30.50c, 0.10% C 30.00c, 0.15% C 29.75c, 0.20% C 29.50c, 0.50% C 29.25c, 1% C 29.00c, 1.50% C 28.85c, 2% C 28.75c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. 8 M x D, bulk, 23.25c per lb of contained Cr. C.l., packed 24.15c, ton 25.50c, less ton 27.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max.) Contract, carload, packed, 8M x D, 16.35c per lb of alloy; ton lot 17.2c; less ton lot, 18.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 21.75c per lb of contained chromium plus 12.4c per pound of contained silicon; 1" x down, bulk 21.90c per pound of contained chromium plus 12.60c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 26-39%, Al 7-9%, C 0.05% max.) 21.75c per lb of contained silicon plus 12.4c per lb of contained silicon plus aluminum 3" x down, delivered.

Chromium Metal: Min 97% Cr and 1% Fe) Contract carload, 1" x D; packed, max 0.50% C grade, $1.08 per lb of contained chromium ton lot $1.10, less ton $1.12. Delivered. Spot, add 5c.

SILICON ALLOYS

25.30% Ferrosilicon: Contract, carload, lump, bulk, 20.00c per lb of contained Si; packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.45c, less ton 17.1c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered. Spot, add 0.8c.

Low-Aluminum 85% Ferrosilicon: (Al 0.50% max) Add 0.7c to 85% ferrosilicon prices.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.5c per lb of contained Si, carload packed 18.7c, ton lot 19.65c, less ton 20.7c. Delivered. Spot, add 0.25c.

Silicon Metal: (Min 97% Si and 1% max Fe). C.l. lump, bulk, regular 20.0c per lb of Si, c.l. packed 21.2c, ton lot 22.1c, less ton 23.1c. Add 1.5c for max, 0.10% calcium grade. Deduct 0.4c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe.) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90c per lb of alloy, ton lots packed 11.30c, 200 to 1999 lb 11.65c, smaller lots 12.15c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12 % max, C 3-3.5% max). Contract, any quantity, $3.10 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 35-55%, Si 2-3.5% max, C 0.5-1% max), $3.20. **Primos and High Speed Grades** (V 35-55%, Si 1.50% max, C 0.20% max) $3.30.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot, add 5c. F.o.b. Washington, Pa., prices 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

TUNGSTEN ALLOYS*

Ferrotungsten: (70-80%). 10,000 lb W or more, $4.85 per lb of contained W; 2000 lb W to 10,000 lb W, $4.95; less than 2000 lb W, $5.07, f.o.b. Niagara Falls, N. Y.

* Government ceiling prices, effective May 7, 1951, f.o.b Niagara Falls, N. Y., basis.

Note: Current prices on zirconium, calcium and briquetted alloys appeared on page 161 July 14 issue; manganese, titanium and "other" ferroalloys, page 163, July 7. Refractories prices were published on page 161, July 14.

CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, as amended Feb. 5, 1952.

STEELMAKING SCRAP COMPOSITE

July 17	$42.50
July 10	42.50
June, 1952	42.63
July, 1951	44.00
July, 1947	37.23

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin; and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin.

Basing Point	Grade 1 No. 1 Bundles Dealer, Industrial	No. 1 Heavy Melt Railroad
Alabama City, Ala..	$39.00	$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa.	42.00	44.00
Birmingham, Ala.	39.00	41.00
Brackenridge, Pa.	44.00	46.00
Buffalo, N. Y.	43.00	45.00
Butler, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del.	42.50	44.50
Cleveland, O.	43.00	45.00
Coatesville, Pa.	42.50	44.50
Conshohocken, Pa.	42.50	44.50
Detroit, Mich.	41.15	43.15
Duluth, Minn.	40.00	42.00
Harrisburg, Pa.	42.50	44.50
Houston, Tex.	37.00	39.00
Johnstown, Pa.	44.00	46.00
Kansas City, Mo.	39.50	41.50
Kokomo, Ind.	42.00	44.00
Los Angeles	35.00	37.00
Middletown, O.	43.00	45.00
Midland, Pa.	44.00	46.00
Minnequa, Colo.	38.00	40.00
Monessen, Pa.	44.00	46.00
Phoenixville, Pa.	42.50	44.50
Pittsburg, Calif.	35.00	37.00
Pittsburgh, Pa.	44.00	46.00
Portland, Oreg.	35.00	37.00
Portsmouth, O.	42.00	44.00
St. Louis, Mo.	41.00	43.00
San Francisco	35.00	37.00
Seattle, Wash.	35.00	37.00
Sharon, Pa.	44.00	46.00
Sparrows Pt., Md.	42.00	44.00
Steubenville, O.	44.00	46.00
Warren, O.	44.00	46.00
Weirton, W. Va.	44.00	46.00
Youngstown, O.	44.00	46.00

Differentials from Base

Differentials per gross ton for other grades of dealer and industrial scrap:

O-H and Blast Furnace Grades

2. No. 1 Busheling	Base
3. No. 1 Heavy Melting	—$1.00
4. No. 2 Heavy Melting	— 1.00
5. No. 2 Bundles	— 1.00
6. Machine Shop Turnings.	—10.00
7. Mixed Borings and Short Turnings	— 6.00
8. Shoveling Turnings	— 6.00
9. No. 2 Busheling	— 4.00
10. Cast Iron Borings	— 6.00

Elec. Furnace and Fdry. Grades

11. Billet, Bloom & Forge Crops	+ 7.50
12. Bar Crops & Plate	+ 5.00
13. Cast Steel	+ 5.00
14. Punchings & Plate Scrap	+ 2.50
15. Electric Furnace Bundles	+ 2.00
Cut Structurals & Plate:	
16. 3 feet and under	+ 3.00
17. 2 feet and under	+ 5.00
18. 1 foot and under	+ 6.00
19. Briquetted Cast Iron Borings	Base
Foundry, Steel:	
20. 2 feet and under	Base
21. 1 foot and under	+ 2.00
22. Springs and Crankshafts	+ 1.00
23. Alloy Free Turnings	— 3.00
24. Heavy Turnings	— 1.00
25. Briquetted Turnings	Base
26. No. 1 Chemical Borings	— 3.00
27. No. 2 Chemical Borings	— 4.00
28. Wrought Iron	+10.00
29. Shafting	+10.00
31. Old Tin & Terne Plated Bundles	—10.00

Unprepared Grades

When compressed constitutes:

32. No. 1 Bundles	— 6.00
33. No. 2 Bundles	— 9.00
34. Other than material suitable for hydraulic compression	— 8.00

Restrictions on Use

(1) Prices for Grades 11 and 23 may be charged only when shipped to a consumer directly from an industrial producer; otherwise ceiling prices shall not exceed prices established for Grades 12 and 8, respectively.

(2) Prices established for Grades 26 and 27 may be charged only when sold for use for chemical or annealing purposes, and in the case of Grade 27, for briquetting and direct charge into an electric furnace; otherwise ceiling prices shall not exceed price established for Grade 10.

(3) Prices established for Grade 28 may be charged only when sold to a producer of wrought iron; otherwise ceiling price shall not exceed ceiling price for corresponding grade of basic open-hearth.

(4) Premiums for Grades 11-18, 20 and 21 may be charged only when sold for use in electric and acid open-hearth furnaces or foundries; or in basic O-H or blast furnace under NPA allocation or OPS authorization.

(5) Prices for Grade 29 may be charged only when sold for forging or rerolling purpose.

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 railroad heavy melting steel) for other grades of railroad steel scrap:

2. No. 2 Heavy Melting Steel	—$2.00
3. No. 2 Steel Wheel	Base
4. Hollow Bored Axles and loco. axles with keyways between the wheelseats.	Base
5. No. 1 Busheling	— 3.50
6. No. 1 Turnings	— 3.00
7. No. 2 Turnings, Drillings & Borings	—12.00
8. No. 2 Cast Steel and uncut wheelcenters	— 6.00
9. Uncut Frogs, Switches.	Base
10. Flues, Tubes & Pipes	— 8.00
11. Structural, Wrought Iron and/or/steel, uncut	— 6.00
12. Destroyed Steel Cars	— 8.00
13. No. 1 Sheet Scrap	— 9.50
14. Scrap Rails, Random Lengths	+ 2.00
15. Rerolling Rails	+ 7.00
Cut Rails:	
16. 3 feet and under	+ 5.00
17. 2 feet and under	+ 6.00
18. 18 inches and under	+ 8.00
19. Cast Steel, No. 1	+ 3.00
20. Uncut Tires	+ 2.00
21. Cut Tires	+ 5.00
Bolsters & Side Frames:	
22. Uncut	Base
23. Cut	+ 3.00
24. Angles, Splice Bars & Tie Plates	+ 5.00
25. Solid Steel Axles	+12.00
26. Steel Wheels, No. 3 oversize	Base
27. Steel Wheels, No. 3	+ 5.00
28. Spring Steel	+ 5.00
29. Couplers & Knuckles	+ 5.00
30. Wrought Iron	+ 8.00
31. Fireboxes	— 8.00
32. Boilers	— 6.00
33. No. 2 Sheet Scrap	—13.00
34. Carsides, Doors, Car Ends, cut apart	— 6.00
35. Unassorted Iron & Steel	— 6.00
36. Unprepared scrap, not suitable for hydraulic compression	— 8.00

Preparation Charges

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of dealer or industrial origin authorized by OPS are:

(1) For preparing into Grades No. 3, No. 4 or No. 2, $8.
(2) For hydraulically compressing Grade No. 1, $6 per ton; Grade No. 5, $8.
(3) For crushing Grade No. 6, $3. For preparing into:
(4) Grade No. 25, $6.
(5) Grade No. 19, $6
(6) Grades No. 12, No. 13, No. 14, No. 16, or No. 20, $10.
(7) Grade No. 17 or No. 21, $11.
(8) Grade No. 18, $12.
(9) For hydraulically compressing Grade No. 15, $8.
(10) For preparing into Grade No. 28, $10.

Ceiling fees per gross tons which may be charged for intransit preparation of any grade of railroad origin shall be:

(1) For preparing into Grade No. 1 and Grade No. 2, $8.
(2) For hydraulically compressing Grade No. 13, $6.

For preparing into:

(3) Grade No. 16, $4.
(4) Grade No. 17, $5.
(5) Grade No. 18, $7.
(6) Grade No. 21, $4.
(7) Grade No. 23, $4.

Ceiling fees per gross ton which may be charged for intransit preparation of cast iron are limited to:

(1) For preparing Grade No. 8 into grade No. 7, $9.
(2) For preparing Grade No. 3 into Grade No. 11, $7.
(3) For preparing Grade No. 3 into Grade No. 1, $4.

CAST IRON SCRAP

Ceiling price per gross ton for following grades shall be f.o.b. shipping point:

Cast Iron:	
1. No. 1 (Cupola)	$49.00
2. No. 2 (Charging Box)	47.00
3. No. 3 (Hvy. Breakable)	45.00
4. No. 4 (Burnt Cast)	41.00
5. Cast Iron Brake Shoes.	41.00
6. Stove Plate	46.00
7. Clean Auto Cast	52.00
8. Unstripped Motor Blocks	43.00
9. Wheels, No. 1	47.00
10. Malleable	55.00
11. Drop Broken Machinery	52.00

OPEN MARKET

(Delivered prices include broker's commission. Asterisk [*] denotes nominal price.)

Birmingham
(Delivered)

No. 1 cupola cast	$42.00
Stove plate	37.00
Charging box cast	39.00-40.00
Heavy breakable	36.00-37.00
Drop broken machinery	42.00-43.00
Unstripped motor blocks	35.00-36.00

Boston
(F.o.b. shipping point)

No. 1 cupola cast	32.00
Heavy breakable	30.00
Stove plate	30.00
Unstripped motor blocks	28.00

Buffalo
(Delivered)

No. 1 heavy melting	37.00*
No. 2 heavy melting	37.00*
No. 1 bundles	38.00*
No. 1 busheling	38.00*
No. 2 bundles	37.00*
Machine shop turnings.	27.00*
Mixed borings, turnings	31.00*
Cast iron borings	31.00*
Short shoveling turnings	31.00*
No. 1 cupola cast	41.00-42.00*
No. 1 machinery cast	42.00-43.00*

Chicago
(Delivered)

No. 2 heavy melting	38.50
No. 2 bundles	38.50
Machine shop turnings.	26.00-27.00
Mixed borings, turnings	31.00-32.00
Shoveling turnings	31.00-32.00
Cast iron borings	31.00-32.00
No. 1 cupola cast	43.00-47.00
Charging box cast	39.00-41.00
Heavy breakable	36.00-38.00
Burnt cast	36.00-38.00
Cast iron brake shoes.	40.00-41.00
Stove plate	36.00-41.00
Clean auto cast	43.00-45.00
Unstripped motor blocks	33.00-35.00
Malleable	48.00-50.00
Drop broken machinery	45.00-50.00

Cleveland
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	38.00-39.00
No. 1 bundles	40.00-42.00
No. 2 bundles	38.00-39.00
Machine shop turnings.	25.00-26.00
Mixed borings, turnings	29.00-30.00
Shoveling turnings	29.00-30.00
Cast iron borings	29.00-30.00
No. 1 cupola	48.00-49.00
Charging box cast	45.00-46.00
Burnt cast	45.00-46.00
Stove plate	45.00-46.00
Clean auto cast	48.00-49.00
Unstripped motor blocks	40.00-41.00
Malleable	51.00-52.00
Drop broken machinery	49.00-50.00

Detroit
(Brokers' buying prices; f.o.b. shipping point)

Machine shop turnings.	24.00-25.00
No. 1 cupola cast	46.00-47.00
Heavy breakable	42.00-43.00
Clean auto cast	48.00-49.00
Unstripped motor blosks	39.00*
Drop broken machinery	48.00-49.00
Charging box cast	45.00

New York
(Brokers' buying prices; delivered consumers' plants)

Cupola cast	38.60
Unstripped motor blocks	34.00

Philadelphia
(Delivered)

No. 1 heavy melting	41.00
No. 2 heavy melting	39.00
No. 1 bundles	42.50†
No. 2 bundles	39.00
No. 1 busheling	42.50†
Mixed borings, turnings	34.50
Machine shop turnings.	30.00
Short shoveling turnings	34.50
No. 1 cupola cast	39.00
Unstripped motor blocks	35.00
Heavy breakable	41.50
Machinery cast	48.00-49.00

† Ceiling price.

Pittsburgh
(Delivered)

No. 1 cupola cast	46.00
Heavy breakable	45.00

San Francisco
(Delivered)

No. 2 bundles	30.00
No. 1 cupola cast	42.00

Seattle
(F.o.b. shipping point)

No. 2 bundles	29.00
No. 1 cupola cast	39.00-40.00
Heavy breakable	35.00-40.00

St. Louis
(Delivered)

No. 1 cupola	41.00
Stove plate	39.00
Unstripped motor blocks	35.00

Youngstown
(Delivered)

No. 2 heavy melting	38.00-39.00*
No. 2 bundles	38.00-39.00*
Machine shop turnings.	34.00*

HAMILTON, ONT.
(Delivered Prices)

Heavy Melt.	$35.00
No. 1 Bundles	35.00
No. 2 Bundles	35.00
Mechanical Bundles	31.50
Mixed Steel Scrap	31.00
Mixed Borings, Turnings	32.00
Rails, Remelting	35.00
Rails, Rerolling	38.00
Busheling	29.50
Bushelings new factory:	
Prep'd	33.00
Unprep'd	31.00
Short Steel Turnings	32.00
Cast Iron Grades†	
No. 1 Machinery Cast	50.00

† F.O.B. shipping point.

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The Metal Market

Continuous Conveyor at Copper Company

Manual handling of brass and copper sheet is eliminated at Chase Brass & Copper Co., subsidiary of Kennecott Copper Corp., Waterbury, Conn., by a continuous conveyor system. Part of Chase's $3.5 million plant expansion, the conveyor maintains a steady flow of sheets between rolling, annealing, pickling and storage. These rolls are moving into and out of the bright annealing furnaces

Domestic copper and aluminum prices may go up just as the supply is becoming improved. The reason: Inevitable increases in labor costs

UNLESS the government steps in with a mammoth subsidy plan, you'll probably find yourself paying more for domestic copper and aluminum at a time when they're becoming relatively plentiful.

Nickel is also likely to cost more. But for lead, zinc, tin, antimony, cadmium and silver, if a price change occurs, it will be in the other direction.

Postwar Habit — Reason for the price hikes on the horizon lies in increased labor costs that seem inevitable. Contracts are open now in mines and smelters. Negotiations under way have met with little success.

U. S. copper mines, caught between two fires, will exert most price pressure. While they are historically higher cost producers than most mines outside the country, they have been held pricewise to two-thirds of the prevailing world market price.

Wages Boosted — International Nickel Co. of Canada raised wages of 16,000 employees in Sudbury, Ont., represented by IMMSW, from 7.5 to 10.5 cents an hour.

Aluminum Co. of America asked OPS for a price increase of 2 cents a pound for pig and 10 per cent for fabricated and semifabricated aluminum. Its application was based on increased cost of materials and labor, including anticipated labor costs in the 26-cent package raise signed with AFL's International Council of Aluminum Workers. OPS will call an industry-wide meeting of producers and fabricators of aluminum to discuss the price boost.

Producers of other metals will be more inclined to absorb the cost of increased wages to the limit possible. Lead, zinc, antimony, cadmium, tin and silver companies are in no position to up prices in the present market. Zinc in fact is overdue for a break.

They're Buying to the Limit

Warehousers of brass mill products find small consumers are buying to the limit of their liberalized allotments. Even with vacations in many plants, consumers are cutting into distributors' balanced and fairly comfortable stocks as the strikes continue in the majority of brass mills and copper mine strike threats become more apparent.

Secondary Aluminum Cheaper

Effects of the steel strike and vacations in industry are showing up on secondary aluminum ingot prices. Steel deoxidizing aluminum (grades 3 and 4) are quoted at 1 cent below ceilings—and that price is nominal. Better grades don't show as much weakness. Current quotations are the first below ceiling since controls went on. Foundry grades also are weak, with exception of the low copper alloys. Piston alloys are quoted at 19.50 cents and No. 12 foundry alloy at 18.50. Scrap aluminum which goes into the remelt ingots is generally steady, though sellers are absorbing freight in lower grades.

Wanted: Aluminum Business

Primary aluminum producers are pushing NPA to open-end unfilled capacity at the end of lead time. Third-quarter mill books show a small amount of open space and some producers report business is still slow. Greatest backlog is in sheet, but even in that product it's far below the three weeks considered normal for the industry.

Primary aluminum production in May, at 80,804 tons, topped April by 5 per cent. Sheet and plate shipments showed a slight increase.

Entitlements Are Prized

Few copper users are turning back to NPA their entitlements to buy, and there are more than enough requests for extra tonnages. Some buying against July allocations is for August delivery, an indication of confidence in price firmness.

Nonferrous Briefs

Brass and bronze ingot makers complain that July business is the worst in years . . . The Nonferrous Scrap Metal Mobilization Council suspended operations completely . . . American Smelting and Refining Co. is closing its Corocoro copper mine in Bolivia . . . Alcoa's Davenport, Iowa, works is getting a $4.5 million 144-inch 4-high hot and cold reversing rolling mill capable of producing tapered aluminum sheet and plate in widths up to 10 feet and in lengths exceeding 33 feet.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley; Lake 24.62½c, delivered.

Brass Ingots: 85-5-5-5 (No. 115) 27.25c, 88-10-2 (No. 215) 40.00c; 80-10-10 (No. 305) 33.00c; No. 1 yellow (No. 405) 23.25c.

Zinc: Prime western 15.00c; brass special 15.25c; intermediate 15.50c, East St. Louis; high grade 16.35c, delivered.

Lead: Common 15.80c; chemical 15.90c; corroding 15.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 19.00c, pigs 18.00c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 19.50c; No. 12 foundry alloy (No. 2 grade) 18.50c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 18.80c; grade 2, 18.60c; grade 3, 18.40c; grade 4, 18.20c.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 121.50c.

Antimony: American 99-99.8% and over but not meeting specifications below 39.00c; 99.8% and over (arsenic 0.05% max., other impurities 0.1% max.) 39.50c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 56.50c; 25-lb pigs, 59.15c; "XX" nickel shot, 60.15c; "F" nickel shot or ingots, for addition to cast iron, 56.50c. Prices include import duty.

Mercury: Open market, spot, New York, $190-$195 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $1.56 per lb of alloy, f.o.b. Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2.25 del; special or patented shapes $2.40.

Cobalt: 97.99%, $2.40 per lb for 500 lb (kegs); $2.42 per lb for 100 lb (case); $2.47 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 82.75c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $24 per troy ounce.

Iridium: $200 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Ceiling prices, cents per pound, f.o.b. mill, effective July 1, 1952)

Sheet: Copper 45.52; yellow brass 40.17; commercial bronze, 95% 45.15; 90% 44.38; red brass, 85% 43.10; 80% 42.34; best quality, 41.35; nickel silver, 18%, 55.08; phosphor-bronze grade A, 5%, 64.71.

Rod: Copper, hot-rolled 41.37; cold-drawn 42.62; yellow brass free cutting, 33.85; commercial bronze 95%, 44.84; 90% 44.07; red brass 85%, 42.79; 80%, 42.03.

Seamless Tubing: Copper 45.56; yellow brass 43.18; commercial bronze, 90%, 44.04; red brass, 85%, 46.01.

Wire: Yellow brass 40.46; commercial bronze, 95%, 45.44; 90%, 44.67; red brass, 85%, 43.39; 80%, 42.63; best quality brass, 41.64.

(Base prices, effective July 1, 1952)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 32.795; 30,000 lb lots, 32.92; l.c.l., 33.42, Weatherproof, 100,000 lb, 30.60; 30,000 lb , 33.85; l.c.l., 34.35. Magnet wire del., 15,000 lb or more, 38.75; l.c.l., 39.50.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders)

Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	30.1	...	...
0.135-0.096	12-48	30.6	...	...
0.095-0.077	12-48	31.2	29.1	33.2
0.076-0.061	12-48	31.8	29.3	33.4
0.060-0.048	12-48	32.1	29.5	33.7
0.047-0.038	12-48	32.5	29.8	34.0
0.037-0.030	12-48	32.9	30.2	34.6
0.029-0.024	12-48	33.4	30.5	35.0
0.023-0.019	12-36	34.0	31.1	35.7
0.018-0.017	12-36	34.7	31.7	36.6
0.016-0.015	12-36	35.5	32.4	37.6
0.014	12-24	36.5	33.3	38.9
0.013-0.012	12-24	37.4	34.0	39.7
0.011	12-24	38.4	35.0	41.2
0.010-0.0095	12-24	39.4	36.1	42.7
0.009-0.0085	12-24	40.6	37.2	44.4
0.008-0.0075	12-24	41.9	38.4	46.1
0.007	12-18	43.3	39.7	48.2
0.006	12-18	44.8	41.0	52.8

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	—Round— R317-T4 17S-T4	R-317-T4	—Hexagonal— 17S-T4
0.125	52.0	....	....
0.156-0.0188	44.0	....	....
0.219-0.313	41.5	....	....
0.375	40.0	46.0	48.0
0.406	40.0	....	....
0.438	40.0	46.0	48.0
0.469	40.0	....	....
0.500	40.0	46.0	48.0
0.531	40.0	....	....
0.563	40.0	....	45.0
0.594	40.0	....	....
0.625	40.0	43.5	45.0
0.688	40.0	....	45.0
0.750-1.000	39.0	41.0	42.5
1.063	39.0	....	41.0
1.125-1.500	37.5	39.5	41.0
1.563	37.0	....	....
1.625	36.5	....	39.5
1.688-2.000	36.5	....	....

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $21.00 per cwt; add 50c cwt 10 sq ft to 140 sq ft. Pipe: Full coils $21.00 per cwt. Traps and bends: List prices plus 50%.

ZINC

Sheets 23.00c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 21.25c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 22.50c; over 12-in., 22.50-23.00c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 77.00c. Strip, cold-rolled, 83.00c. Rods and shapes, 73.00c. Plates, 75.00c. Seamless tubes, 106.00c.

MONEL

(Base prices f.o.b. mill)

Sheets, cold-rolled 60.50c. Strip, cold-rolled 63.50c. Rods and shapes, 58.50c. Plates, 59.50c. Seamless tubes, 93.50c. Shot and blocks, 53.50c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb, 55.00-62.00c; 25 to 99 lb, 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads, 28.00c; 5 tons and over 28.50c; 1 to 5 tons, 29.00c; less than 1 ton 29.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled, 38.34c; oval 37.84c.

Nickel Anodes: Rolled oval, carbonized, carloads, 74.50c; 10,000 to 30,000 lb 75.50c; 3000 to 10,000 lb 76.50c; 500 to 3000 lb 77.50c; 100 to 500 lb, 79.50c; under 100 lb, 82.50c; f.o.b. Cleveland.

Nickel Chloride: 36.50c in 100 lb bags; 34.50c in lots of 400 lb through 10,000 lb; 34.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on 400 lb or more.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers 86.7c; 100 or 350 lb drums only, 100 to 600 lb 71.60c; 700 to 1900 lb, 69c; 2000 to 9900 lb, 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Tin Anodes: Bar, 1000 lb and over, $1.375; 500 to 999 lb, $1.38; 200 to 499 lb, $1.385; less than 200 lb, $1.40. Freight allowed east of Mississippi and north of Ohio and Potomac.

Zinc Cyanide: 100 lb drums, less than 10 drums 54.30c, 10 or more drums, 52.30c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb $1.11; more than 2000 lb, $1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Stannous Chloride (Anhydrous): In 400 lb bbl, 98.5c; 100 lb kegs 99.5c. Freight allowed.

Scrap Metals

Brass Mill Allowances

Ceiling prices in cents per pound for less than 20,000 lb, f.o.b. shipping point, effective June 26, 1951.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	21.50	21.50	20.75
Yellow Brass	19.125	18.875	17.875
Commercial Bronze			
95%	20.50	20.25	19.75
90%	20.50	20.25	19.75
Red Brass			
85%	20.25	20.00	19.375
80%	20.125	19.875	19.375
Muntz metal	18.125	17.875	17.375
Nickel silver, 10%	21.50	21.25	10.75
Phos. Bronze, 5%	25.25	25.00	24.00

Copper Scrap Ceiling Prices

(Base prices, cents per pound, less than 40,000 lb f.o.b. point of shipment)

Group 1: No. 1 copper 19.25; No. 2 copper wire and mixed heavy 17.75; light copper 16.50; No. 1 borings 19.25; No. 2 borings 17.75; refinery brass, 17.00 per lb of dry Cu content for 50 to 60 per cent material and 17.25 per lb for over 60 per cent material. Group II: No. 1 soft red brass solids 18.50; No. 1 composition borings 19.25 per lb of Cu content plus 63 cents per lb of tin content; mixed brass borings 19.25 per pound of Cu content plus 60 cents per lb of tin content; unlined red car boxes 18.25; lined red car boxes 17.25; cocks and faucets 16.00; mixed brass screens 16.00; zincy bronze solids and borings 16.25.

Aluminum Scrap Ceiling Prices

(Cents per pound, f.o.b. point of shipment, less than 5000 lb)

Segregated plant scrap: 2s solids, copper free, 10.50; high grade borings and turnings, 8.50; No. 12 piston borings and turnings, 7.50. Mixed plant scrap: Copper-free solids, 10.00; dural type, 9.00. Obsolete scrap: Pure old cable, 10.00; sheet and sheet utensils, 7.25; old castings and forgings, 7.75; clean pistons, free of struts, 7.75; pistons with struts, 5.75.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Lead: Heavy 12.00-12.25; battery plates 7.00-7.50; linotype and stereotype 13.50-14.00; electrotype 12.00-12.50; mixed babbitt 14.50-14.75.

SMELTERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Zinc: Old zinc, 8.50; new die cast scrap, 8.00; old die cast scrap, 8.00.

DAILY PRICE RECORD

1952	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
July 1-17	24.50	15.80	15.00	121.50	19.00	39.00	56.50	82.75
June 24-30	24.50	15.80	15.00	121.50	19.00	39.00	56.50	82.75
June 23	24.50	15.30	15.00	121.50	19.00	39.00	56.50	82.75
June 18-21	24.50	14.80	15.00	121.50	19.00	39.00	56.50	82.75
June 5-17	24.50	14.80	16.00	121.50	19.00	39.00	56.50	82.75
June 2-4	24.50	14.80	17.50	121.50	19.00	39.00	56.50	82.75
June Avg.	24.50	15.06	15.74	121.50	19.00	39.00	56.50	82.75
May Avg.	24.50	15.519	19.50	121.50	19.00	42.077	56.50	85.356
Apr. Avg.	24.50	18.723	19.50	121.50	19.00	49.077	56.50	88.00
Mar. Avg.	24.50	18.80	19.50	121.50	19.00	50.00	56.50	88.00
Feb. Avg.	24.50	18.80	19.50	121.50	19.00	50.00	56.50	88.00
Jan. Avg.	24.50	18.80	19.50	109.404	19.00	50.00	56.50	88.00

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

Sheets, Strip . . .

Sheet and Strip Prices, Page 155 & 156

Chicago—Prolongation of the steel strike is bringing considerable renewed interest in conversion tonnage. Much of this stems from the automotive industry. Inland Steel Co., which has figured substantially in such business in the past and had expected it to dry up completely in third quarter, now is sold out on ingot conversion capacity for the first two months following ending of the strike, and is booking business into the third month.

Cleveland—Even should the strike end shortly, so much sheet production has been lost so far there will be little chance for consumers to place new orders on mill books for fourth quarter unless substantial third quarter tonnage is canceled. This latter seems unlikely. Actually, the supply pinch will be even more severe than generally anticipated since military and related needs will be given preference in the matter of shipments when rolling is resumed. This means shipments on regular account will be further delayed, and that the filling of depleted supply pipelines will drag out over a much longer period than ordinarily would be the case.

Boston—Normal pattern of distribution by unstruck flat-rolled mills, notably sheets, is disrupted by military directives. Production of the largest producer operating is entirely scheduled by government men at the mills.

New York—While there is no great pressure for sheets. little tonnage is going begging at anything like normal market prices. Regardless of the uncertainty as to the outlook in their own business, there is a growing feeling among sheet metal fabricators that supplies of hot and cold-rolled sheets over the remainder of the year will be tight.

Philadelphia—Sharp spurt in sheet demand appears assured once the steel strike is settled. Manufacturers of some consumer durables may find a continued lag in demand for their products, especially with labor disruptions over recent weeks and particularly those affecting the steel industry having curtailed purchasing power. However, consumer durables inventories have been reduced as result of restricted production.

Pittsburgh—Producers in this area haven't opened books for fourth quarter. This fact almost certainly will bring conversion back into the sheet picture but no one expects activity to compare with that in the peak postwar period.

St. Louis—Granite City Steel Co. resumed production July 11 following contract settlement with the union involving an average 18-cent wage increase, a 2 to 3 cent shift differential, and a number of fringe benefits. It already had the union shop. Officials estimate the seven-week strike of mill workers lost 75,000 tons of steel production, putting deliveries three months behind schedule.

Los Angeles—Fabricators are concerned over the 3 to 4 months lead-time that will be necessary to get steel into their shops once all-out steel production is resumed. Output of the Fontana mill of Kaiser Steel

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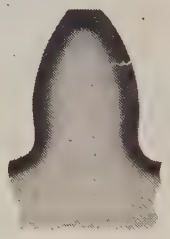

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Steel Bars . . .

Bar Prices, Page 155

Cleveland—Merchant bar consumers are going to have a tough supply problem through remainder of the year. Expectations are directives on military and related account will take the bulk of output for some time immediately after the mills resume rolling. So much production has been lost as result of the strike, little, if any, new tonnage is likely to be accepted for fourth quarter by the mills, as all their rolling time will be taken up in clearing away second and third quarter commitments. Forge shops are feeling the pinch in steel supplies increasingly. However, while there have been some curtailments in the industry because of steel shortage there have been no complete shutdowns on that score.

Boston—High-rated orders for carbon and alloy bars, also inquiries, are piling up for defense requirements with production practically nil except for some cold-finished from converting mills. Latter volume is small as stocks of hot-rolled are depleted.

New York—Hot carbon bar sellers are convinced they will have little space available for new tonnage in fourth quarter. Even should the steel strike end at once, many will be unable to accept tonnage for the final three-month period, except for high-rated defense work which would replace tonnage already on order books.

Pittsburgh—Not only are the principal bar producers shut down but the only cold-finisher in the district that had been operating is closed for vacation and won't reopen until the strike ends and material begins to flow again. In addition Jones & Laughlin Steel Corp.'s new mill, originally scheduled for operation some time in the fourth quarter, isn't expected to produce any hot-rolled bars until some time in the first quarter of 1953.

Los Angeles—Few hardship cases are reported here due to the shortage of cold-drawn bars. Bar bins have been empty for so long fabricators are not restive under additional shortages caused by the strike.

Wire . . .

Wire Prices, Page 157

Pittsburgh—Large backlog of wire products orders is expected to carry over into the first quarter of next year at Pittsburgh Steel Co. Part of this condition is due to the time lost since the reduction in operations late last year for new construction and a total of 38 days lost this year. Demand is spread out over almost the entire range of products produced by the company. A price increase of 2.6 per cent is being added to all invoices in accordance with the price rise possible under the Capehart formula. The company's request for an $8.16 per ton increase was refused pending final settlement of the steel strike.

Boston—Most wire consumers must build up inventories later this year after readjusting earlier orders downward to meet the lag in business in third quarter. Consumption of wire is not at high level, but because of curtailed production, reserve supplies have declined.

Tubular Goods . . .

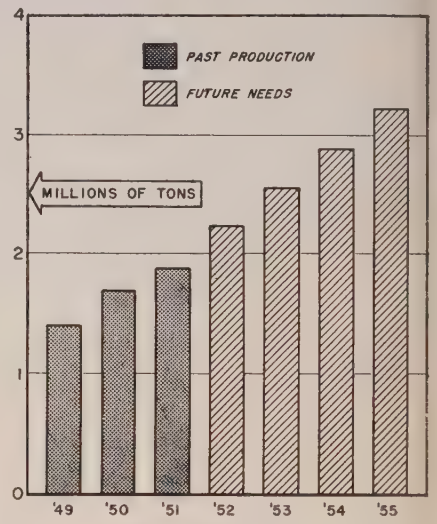
Tubular Goods Prices, Page 159

Washington—Oil country tubular goods (exclusive of drill pipe) will continue to rise in demand through 1955, the Petroleum Administration for Defense believes.

The figures charted through 1951 are for actual production of new tubular goods. Those for 1952 and 1953 are the needs of new tubular goods if the petroleum expansion goal, approved by the Defense Production Administration, is to be realized. Those for 1954 and 1955 are the needs if 60,000 wells are to be drilled in the former year, 65,000 in the latter year.

Oil Country Tubular Goods

. . . exclusive of drill pipe



Source: Petroleum Administration for Defense

Washington—National Production Authority last week invoked temporary restrictions on delivery of oil country casing and tubing to assure use of such material for exploratory drilling, military and defense-rated orders only. Schedule 2 to Direction 1 of order M-6A was issued effective July 16, providing that during the steel strike no casing or tubing shall be delivered by a steel distributor except under authorized controlled materials orders bearing the symbols A, B, C, or E and a digit, Z-2, or H2E. In still another move NPA issued a directive to the Pittsburgh Steel Co. requiring it to fill within the next 30 days orders for about 6400 tons of casing and tubing the company has received from its regular distributors.

Seattle—Army, Navy and other government agencies are using considerable volume of water pipe and accessories. Majority of bid calls, however, invite alternative proposals.

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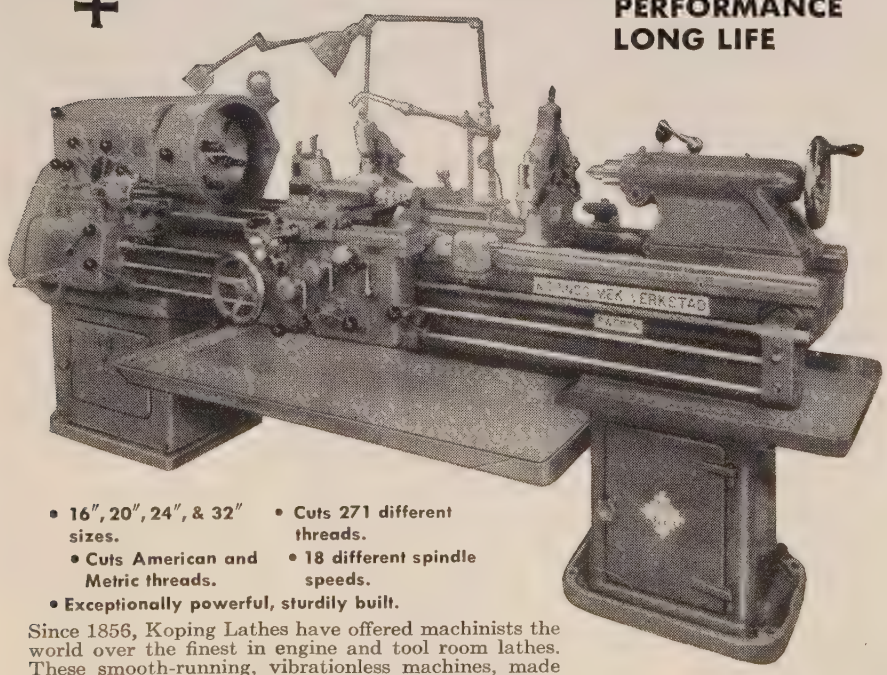

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Plates . . .

Plate Prices, Page 155

Boston—Lack of plates is slowing up considerable heavy fabricated work, including bridges and industrial engineering projects. Mills are booked through this quarter and into fourth with some directive volume involved. Practically all plates moved are at premium prices.

New York—Plate mills in operation are in receipt of an increasing amount of high rated defense work, which is crowding off the schedules a considerable tonnage of lower rating. Most plate fabricators' inventories are getting dangerously low.

Philadelphia—At least one eastern plate mill unaffected by the strike has about reached the point where it can no longer accept the high-rated defense work which has been coming its way under the special regulation applying to non-struck mills and affecting shipments up to and including Sept. 15.

Pittsburgh — There isn't much chance anyone will be able to get any new plate tonnage on the books in the fourth quarter, but customer pressure on the mills is virtually nonexistant.

Chicago — Plate fabricators probably can hang on another two weeks before suspension of operations becomes necessary for lack of steel. Reduction in working hours and vacations serve the purpose of stretching steel supply.

Structural Shapes . . .

Structural Shape Prices, Page 155

Philadelphia — Structural fabricators not closed by the strike are feeling the shortage of shapes. Stocks are low and unbalanced. In some cases locally, storage facilities are practically filled with fabricated work which cannot be shipped because of strikes in certain building trades and because of shortages of certain forms which have interfered with completion of fabrication.

Boston—Structural shops are reluctant to pay premium prices for fill-in stocks to maintain schedules. Most are unable to add to costs. Bridge estimating is heavier than current lettings, including 4500 tons multi-span over the Merrimack river, Newburyport. Contracts, 100 tons or more, placed in the first six months in New England totaled 44,205 tons. This compares with 42,560 tons in the first six months of 1951, and 31,532 tons in the like period of 1950.

New York—Uncertainties created by the steel strike are depressing structural activity. Orders are spotty and little new inquiry is noted.

Pittsburgh—"We'll get the material but it will be a quarter later in getting here than originally planned," is the view of most structural shape fabricators.

Los Angeles—Strike-caused shortages of structural shapes and reinforcing material are slowing down construction of $250 million worth of state and municipal projects, including bridges and freeways.

San Francisco — Structural steel fabricators are doing well during the steel strike. Inventories had been built up to about a two months' supply, prior to the walkout, as a result

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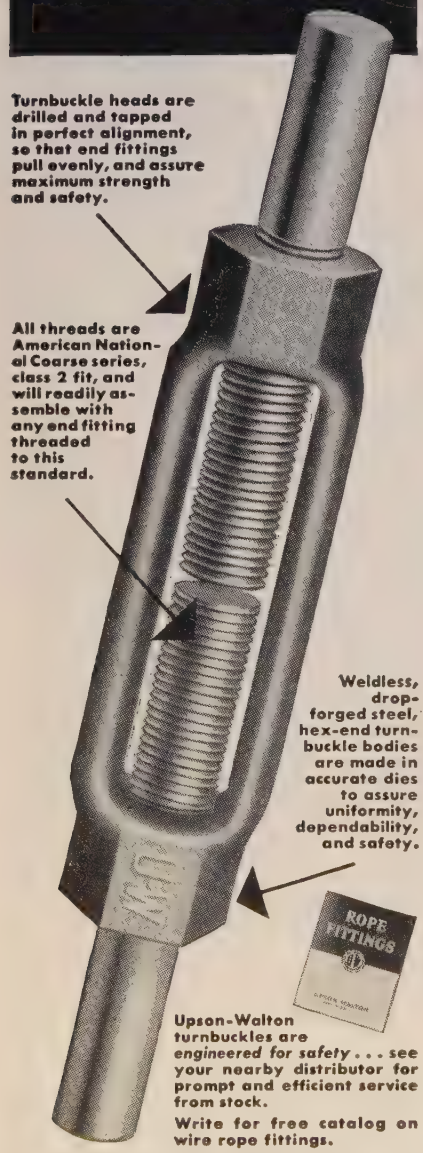
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of a prolonged carpenters' strike that was settled just prior to the steel shutdown.

Seattle—Fabricators who have operated without interruption since the mills were closed by the strike are rapidly running out of structural steel stocks and may have to close down shortly.

Warehouse . . .

Warehouse Prices, Page 161

Chicago—Manufacturers of civilian durable goods stand to gain little by NPA's relaxation of the order which again makes warehouse steel available to them. Stocks are so badly unbalanced and depleted that little tonnage is to be had. Some sheets and strip still are on hand but there are virtually no plates, shapes, bars and other widely used products. Cold-drawers are now running only two or three days weekly and their output is down to a trickle.

Washington — Manufacturers of consumer durable goods were authorized by NPA last week to accept delivery of those particular types of the limited stocks of steel controlled materials held in warehouses but not needed for military production. The action, taken in an amendment to Direction 12 to CMP 1, is aimed at averting shutdowns in manufacturing industry and thus minimizing unemployment to some extent. Specifically, the amendment provides that with the exception of items listed in schedule 1 of the direction, producers of civilian goods may accept delivery to fill orders bearing the "V" allotment symbol. The amendment contrasts sharply with the former direction which prohibited deliveries of all types of steel controlled materials to manufacturers of civilian goods.

New York—Local distributors are becoming cleaned out of standard sizes of leading steel products. One large seller is out of steel pipe entirely, and few have much left in the way of hot carbon bars.

Philadelphia—Warehouse business in July will likely prove the lightest for any month this year to date. Vacations have slowed demand, and despite the steel strike there is no real scare buying. Moreover, because of the strike there is not the choice of products

Pittsburgh—Warehouse stocks will not likely come into balance until some time in first quarter next year. Demand isn't too brisk currently because supplies of standard items are almost exhausted and customers unable to get a balanced range of products to maintain operations are unwilling to purchase items that can be procured.

Cleveland — Warehouse volume is restricted by unbalanced and depleted stocks. However, consumer pressure is not as strong as had been anticipated. Many customers get the bulk of their steel supplies direct from the mills. They supplement these shipments by purchases from warehouse. With many manufacturing plants closed or on curtailed schedules for lack of direct mill shipment steel, the distributors are not being called upon for fill-in tonnage to the extent that might be expected. Mill receipts are down to a dribble at warehouses.

Detroit—Relaxation of the government's ban on warehouse shipments to consumer durable goods makers won't help anyone much, in the opinion of this area's distributors. Stocks are too badly depleted to stave off plant closings. One of the larger distributors says the only products still in stock are seconds and even those are unbalanced.

Los Angeles—Smaller warehouses are badly pinched by reduced steel tonnage receipts. Some distributors are buying back steel they previously sold to customers.

San Francisco — "Nothing sensational, just steady inquiry" is the way distributors describe business. They are selling from inventories and it's just a matter of a few weeks before they will be down to rock bottom on many items, however.

Seattle—One of the largest warehouses in this area is completely out of plates and sheets. Current sales consist of odds and ends. Coast mills still in operation are supplying some needed materials but the demands are far beyond supply.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 155

Seattle—As soon as mill operations resume a heavy volume of reinforcing bar orders is expected to be placed.

Tool Steel . . .

Tool Steel Prices, Page 157

Washington—Removal of controls over distribution of all tool steels was recommended by the Tool Steel Industry Advisory Committee to the National Production Authority.

Demand for tool steels now is considerably less than the available supply, committee members pointed out. And, the committee added, distribution controls thus impose a needless burden on buyers.

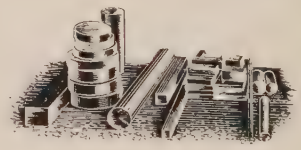
The committee recommended continuance of conservation controls under Order M-80, Schedule B, on production of high-speed tool steel until requirements for tungsten are stabilized.

Reflecting the decline in demand, production of tool steel dropped off (see the chart) in the first four months of 1952, at a time when steel production generally was setting new records.

Tool steel producers in the Pittsburgh area generally are operating, but they may feel the buyer lethargy further as customers hold up tool steel shipments because of lack of other steel.

Tool Steel Shipments

. . . net tons from mills



1951	
First Four Months	53,648
Last Four Months	56,296
1952	
First Four Months	52,375

Source: American Iron & Steel Institute

Rails, Cars . . .

Track Material Prices, Page 157

San Francisco—Layoffs are occurring at Southern Pacific railroad's Sacramento, Calif., shops because of insufficient steel to sustain the road's heavy freight car program.

Scrap . . .

Scrap Prices, Page 162

Cleveland—With the steel mills in this area still idled by the strike, yard stocks are accumulating though at a slower pace than recently. Dealer prices continue on the easy side but in the absence of representative sales the exact level of the market pricewise is difficult to determine. The few distress sales of steelmaking grades below ceilings are not considered an accurate reflection of the overall market position. In fact, buying orders at $40 are reported circulating for No. 2 heavy melting without finding takers. Production scrap continues to move direct on mill account at ceiling levels. There is considerable uncertainty developing with respect to demand after the steel strike ends. While the general view recently has been that the market will be weak for from 30 to 60 days after the mills resume, this view is now tempered somewhat by expectation in scrap trade circles that demand will be considerably stronger through remainder of the year due to the loss of iron ore shipments in the strike. The cast grades continue to move below ceiling levels but a noticeably stronger tone is in evidence.

Boston—Demand for steel and cast scrap is light with prices weak. Not enough cast is moving to accurately test the market.

New York—Steel scrap shipments for the Fairless Works, Morrisville, Pa., are being resumed following a delay of several days for installation of additional materials handling equipment. Contracts involved about 30,000 tons, shipments starting early in July and scheduled for completion within a month.

Buffalo—Scrap prices floundered in a nominal, uncertain market last week. Quotations are on the down grade with indications of further decline. Supplies continue to pile in dealers' yards and along the waterfront.

Philadelphia—No wild scramble for steel scrap is expected when the steel strike ends. Mill inventories are in reasonably good shape. Full resumption of steel production once the strike is settled will be a matter of three weeks or so. The longer the strike continues the more repairs to furnaces will be necessary. Mills now running are making no special effort to lay in tonnage. In fact, one is holding up shipments of No. 2 heavy melting though still taking in No. 2 bundles. Good cast scrap is scarce. On some grades prices are higher. Heavy breakable is quoted $41.50, delivered, including broker's commission. Machinery cast is up to $48 to $49, and No. 1 cupola $39.

Pittsburgh—Reports persist that top open-hearth scrap grades are moving below ceilings but there isn't any evidence that tonnages are large enough to establish a representative

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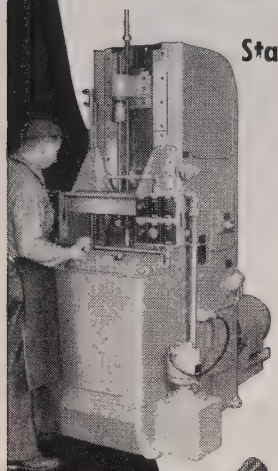

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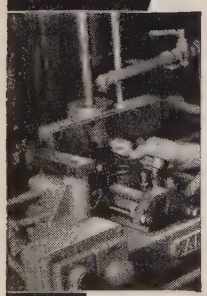

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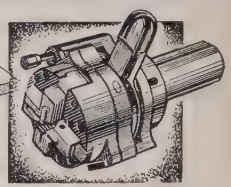

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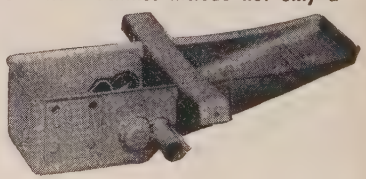

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market price. Mill sources say attempts to make purchases below ceiling have produced little material. A little distress scrap is making its appearance, but this condition isn't considered indicative of the general market.

Detroit—Cast scrap is on the comeback trail, most items being quotable at $2 to $5 over a week ago. Prospect of a shortage leads traders to believe that in a few weeks all grades will be back at ceiling and in active demand. Open-hearth material is in reduced supply with auto plants virtually out of production. No. 1 bundles needed by Ford's open hearths are almost unobtainable.

Chicago—Purchases of No. 1 heavy melting steel and No. 1 bundles at ceiling for delivery when steelmaking resumes apparently settles for the moment the status of the scrap market. Recent sales of No. 2 steel and No. 2 bundles at $38.50 per ton, $3 under ceiling, had caused speculation as to where the top grades would be found at the end of the strike. Some strengthening may be in the offing for cast grades.

St. Louis—Steel scrap began moving as Granite City Steel Co. resumed operations and released hold-up orders from dealers. Market has a fair undertone and is optimistic it has seen the bottom. There are isolated reports of speculative activity in the belief melting steel will go to the ceiling, delivered, in 30 to 40 days after the nationwide strike is settled.

San Francisco—No. 1 cupola cast is quoted by dealers at $42 a gross ton delivered but one big foundry purchased some material direct at $40 and other direct shipments by truck have been offered under that figure. Material is fairly plentiful.

Seattle—In view of decreased scrap consumption due to the steel strike, prices are weaker. Dealers are buying only attractive lots.

Pig Iron . . .

Pig Iron Prices, Page 154

New York—The few sellers with pig iron to offer report increasing pressure for tonnage. Most gray iron foundries in this district find business still sluggish, but are increasingly concerned over the outlook for iron supplies once the industry gets back to normal.

Boston—Users of basic pig iron are concerned over supplies, but consumers of malleable and foundry grades are not particularly alarmed. Many foundries are not taking in iron this month, and the Everett blast furnace is adding to its yard stocks.

Philadelphia—Foundries are showing more interest in pig iron. This, primarily, is because they anticipate general tightening in supply for some weeks to come despite possible early settlement of the steel dispute.

Pittsburgh — Foundry operations are limping along, hampered by shortage of pig iron and sluggish business. Several shops are due to resume operations after vacation shutdowns but operations generally will be below normal though none are reported planning an extended shutdown.

Cleveland — Merchant iron sellers anticipate much tighter supply conditions over remainder of the year than prevailed in first and second quarters. Loss of production due to the steel strike will be felt for months after the furnaces resume operations. Severity of the shortage will depend upon the extent to which castings demand picks up.

Chicago—Gray iron and malleable jobbing foundries are nearing end of scheduled vacation closings with poor prospects. Some have enough pig iron on hand to start up, others haven't.

San Francisco—Pig iron is difficult to obtain and foundries foresee the necessity in the near future of using more scrap in their melts.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 159

Chicago—Producers and sellers of foundry coke had anticipated order cancellations this month but business has held up surprisingly well.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

2500 tons, Boeing Airplane Co., Seattle, flight test hangar; Howard S. Wright Co., Seattle, low $2,772,488 on general contract; steel purchased separately under bids of American Bridge Co. and previously reported.

1600 tons, University of Washington teaching hospital, Seattle, to Pacific Car & Foundry Co., Seattle; J. C. Bosepflug Construction Co., Seattle, general contractor.

1600 tons, power plant, Hartford Electric Light Co., Middletown, Conn., to Steel Construction Co. Inc.; Stone & Webster Engineering Corp., Boston, contractor-engineer.

1428 tons, steel bearing piles, direct, state of Rhode Island, to Bethlehem Steel Co.

785 tons, four warehouses, Veterans Administration, Somerville, N. J., to Schacht Steel Construction Inc., New York.

600 tons, state bridge, Nassau county, New York, to American Bridge Co., Pittsburgh.

600 tons, warehouse, Anheuser-Busch, Newark, N. J., to Groisser & Schlager Iron Works, Somerville, Mass.

500 tons, substation steel, for Bonneville Power Administration, Portland, Ore., to Bethlehem Pacific Coast Steel Corp., Seattle.

500 tons, generating plant, electric light department, Burlington, Vt., to Vermont Structural Steel Co., Burlington; Vermont Construction Co., Boston, general contractor.

500 tons, grade separation structures, New York thruway, Onondaga county, New York; 360 tons to American Bridge Co., Pittsburgh, and 160 tons to Groisser & Shlager, Somerville, Mass.; Northern Construction Co., Lawrence, Mass., general contractor.

500 tons, factory building, Davis & Geck Inc., Danbury, Conn., to Bethlehem Fabricators Inc., Bethlehem, Pa.; Leo F. Caproni, New Haven, Conn., structural engineer; 350 tons, bar joists, to Bethlehem Steel Co.

485 tons, warehouse and maintenance shop, Ft. Eustis, Va., to Richmond Structural Steel Co., Richmond, Va.; J. A. Jones Construction Co., Charlotte, N. C., general contractor; 55 tons, reinforcing, to Virginia Steel Co., Richmond.

175 tons, addition, Central High school, New London, Conn., to Topper & Griggs, Hartford, Conn.; Mondelci & Benvenuti, New London, general contractors; 60 tons reinforcing to Ceco Steel Products Corp., New York.

150 tons, pulp mill, American Viscose Co., Nitro, W. Va., to Bethlehem Steel Co.

100 tons, experimental station, Bureau of Mines, Morgantown, W. Va., to Lehigh Structural Steel Co., Allentown, Pa., through Southeastern Construction Co., Charlestown, W. Va.; reinforcing to West Virginia Steel & Mfg. Co., Huntington, W. Va.

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Waterford, Conn., to Topper & Griggs, Hartford, and Ceco Steel Products Corp., New York; Lorelle & Neccarato, Mystic, Conn., general contractor.

100 tons or more, hangar building, Camp Lejeune, N. C., to Carolina Steel & Iron Co., Greensboro, N. C.; T. A. Loving & Co., Greensboro, general contractor; Virginia Steel Co., Richmond, Va., furnishing reinforcing steel.

100 tons or more, junior-senior high school, Arlington, Va., to Rosslyn Steel & Cement Co., Washington; J. H. Hedin Construction Co., Washington, general contractor; reinforcing to Bethlehem Steel Co.

100 tons or more, supersonic tunnel, laboratory and office building, Langley Field, Va., to Globe Iron Construction Co., Norfolk, Va.; Doyle & Russell, Richmond, Va., general contractors; Virginia Steel Co., Richmond, furnishing reinforcing steel.

STRUCTURAL STEEL PENDING

50,000 tons, cast iron segments, additional traffic lane, Lincoln Tunnel, Port of New York Authority, New York; expected to come up for bids around Aug. 20; necessary approach work will be brought out later.

6000 tons, Elmhurst General Hospital, Queens, bids to be closed by the Department of Public Works, New York city, Aug. 13.

4500 tons, multiple-span steel truss bridge, Merrimack river, Amesbury-Newburyport, Mass., bids Aug. 12, Boston.

2088 tons, state bridge, Lehigh county, Pennsylvania; bids Aug. 8; also, 405 tons of reinforcing bars.

2000 tons, boiler plant, Air Reduction Co., Calvert City, Ky., bids July 21.

1400 tons, first section, laboratory, Army Corps of Engineers, Ft. Monmouth, N. J., bids asked.

1080 tons, six bridges, New York state thruway, Albany county, Collins Bros., Mechanicsville, N. Y., low on general contract.

874 tons, state bridge, Northampton county, Pennsylvania; bids Aug. 8; also, 448 tons of reinforcing bars.

420 tons, three state bridges, Tolland-Willington, Conn., bids Aug. 4, Hartford, Conn.

200 tons, warehouse, for Seneca Ordnance Depot, Romulus, N. Y., bids asked.

175 tons, state bridge, Monroe county, Pennsylvania; bids Aug. 8; also, 177 tons of reinforcing bars.

140 tons, warehouse, Port Newark, N. J., for Port of New York Authority, pending.

Unstated, research laboratory, Burrows Adding Machine Co., Paoli, Pa.; pending.

REINFORCING BARS . . .

REINFORCING BARS PLACED

780 tons, Oschner Foundation Hospital, New Orleans, to Laclede Steel Co., New Orleans; Fransworth & Chambers, Houston, Tex., general contractors; 65 tons structural steel to Jones & Laughlin Steel Corp., New Orleans.

550 tons, power plant, Hartford Electric Light Co., Middletown, Conn., to Truscon Steel Co., Boston; Stone & Webster Engineering Corp., Boston, engineer-contractor.

400 tons, generating plant, electric light department, Burlington, Vt., to Vermont Structural Steel Co., Burlington; Vermont Construction Co., Boston, general contractor.

220 tons, highway bridges, Newbury-Newburyport, Mass., to Northern Steel Inc., Medford, Mass.; A. V. Taurasi Co. Inc., Somerville, Mass., general contractor.

200 tons, grade separation structures, New York thruway, Onondaga county, New York, to Bethlehem Steel Co.; Northern Construction Co., Lawrence, Mass., general contractor.

120 tons, plant additions, Kaman Aircraft Corp., Bloomfield, Conn., to Ceco Steel Products Co., New York; Associated Construction Co., Hartford, Conn.; general contractor.

REINFORCING BARS PENDING

1000 tons or more, approaches to Granville street bridge, Vancouver, B. C.; general contract to Dawson, Wade & Co. Ltd. and British Columbia Bridge & Dredging Co. Ltd., Vancouver, who also have main bridge contract; $1,072,000 available for approaches and additional funds anticipated.

225 tons, Washington state highway bridges in Pacific and Lewis counties; bids to Olympia July 15.

175 tons, Y.W.C.A. building, Boston; McCutcheon Co., Boston, general contractor; Groisser & Shlager, Somerville, Mass., will fabricate structural steel.

PLATES . . .

PLATES PLACED

1900 tons, six tanks, Sinclair Refining Co., Woodbury Junction, N. J., to Hammond Iron Works, Warren, Pa.

RAILS, CARS . . .

LOCOMOTIVES PLACED

International Harvester Co., four 800-hp and two 1200-hp diesel-electric locomotive switching units, to Electro-Motive Division, General Motors Corp., Lagrange, Ill.

RAILROAD CARS PLACED

Bangor & Aroostok, 250 insulated refrigerator cars and 250 insulated box cars, to Pacific Car & Foundry Co., Renton, Wash.

Chesapeake & Ohio, 400 seventy-ton and 300 fifty-ton gondola cars, to Huntington, W. Va., plant of American Car & Foundry Co.

Soo Line, 400 fifty-ton box cars, to own shops.

Toronto, Hamilton & Buffalo, 300 fifty-ton steel box cars, to National Steel Car Corp., Hamilton, Ont.

RAILROAD CARS PENDING

Atlantic Coast Line, 100 to 1000 fifty-ton pulpwood cars and 100 to 1500 seventy-ton cement-phosphate rock cars; bids asked.

RAILS PLACED

Delaware & Hudson, 3750 tons, to Bethlehem Steel Co.

Lehigh & New England, 356 tons, to Bethlehem Steel Co.

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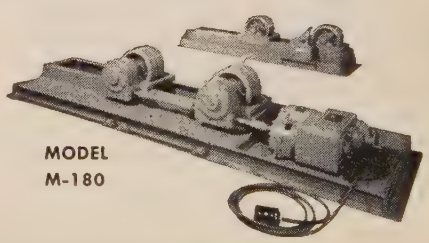
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Atlantic Wire Co., Branford, Conn., is completing an additional wing to its main plant at an estimated cost of $400,000. Additional space will permit more efficient installation of equipment and improve materials handling system. Increase in efficiency of production at current levels is the aim rather than heavier output of wire products processed at Branford.

Budd Dedicates Defense Plant

Budd Co., Philadelphia, dedicated its new military tank parts plant on Fox street near Hunting Park avenue. The $6 million facility will be known as Unit 6 of the company's Hunting Park plant. In this plant, hulls and turrets for a new medium weight tank will be machined and welded under subcontract from Chrysler Corp. Frank Mallee is superintendent of the new plant.

GM To Build Canadian Warehouse

General Motors of Canada Ltd. will erect a $1 million warehouse and sales office at Moncton, N. B. Construction will start as soon as steel can be obtained.

Canadian Firm Expands Forging Plant

Canadian Steel Improvement Ltd., which recently completed its new forging plant at Etobicoke, Ont., is constructing an extension which will add another 40 per cent to productive capacity. The new unit is scheduled to go into production in October, increasing present floor area from 46,000 to 60,000 square feet. The Canadian firm is a subsidiary of Steel Improvement & Forge Co., Cleveland.

Alcoa Closes Jamestown Plant

Aluminum Co. of America, Pittsburgh, will suspend operations permanently at its Jamestown, N. Y., plant on July 15. The plant and its equipment have been offered for sale. Alcoa bought the plant in 1946 to produce a line of aluminum and wood furniture. More recently it has been engaged in the production of television set cabinets.

Tool Firm Building Ft. Worth Plant

Chicago Pneumatic Tool Co. is constructing a plant for production of oil well drilling equipment in Ft. Worth, Tex. The $4.5 million plant will contain 130,000 square feet of floor space. Facilities will include those for machining, grinding, heat treating and hard facing oil well bits. The plant is scheduled for completion in the first quarter of 1953.

Kaydon Buys Frauenthal Company

Kaydon Engineering Corp., Muskegon, Mich., purchased A. Harold Frauenthal Inc., that city. The Frauenthal Division of Kaydon will continue to manufacture multiple-head precision cylinder grinders and boring and turning machines.

Babcock & Wilcox Opens Denver Office

David W. Jones Jr., sales representative for Tubular Products Division, Babcock & Wilcox Co., Beaver Falls, Pa., opened new offices at 1321 Bannock St., Denver.

Rock Island Builds Servicing Shop

Chicago, Rock Island & Pacific Railroad is constructing a $1 million diesel repair and servicing shop at 47th street and Wentworth avenue, Chicago.

Davey Forms Export Subsidiary

Davey Compressor Co., Kent, O., organized Davey International Inc. to handle export sales of its air compressors and truck equipment in the Western Hemisphere. F. C. Kieser is sales manager of Davey International.

Oliver Expands Midwest Operations

Oliver Corp., Chicago, manufacturer of agricultural implements, tractors, etc., expanded its sales and

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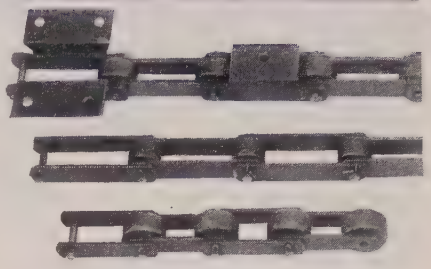

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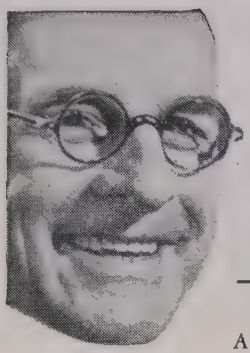

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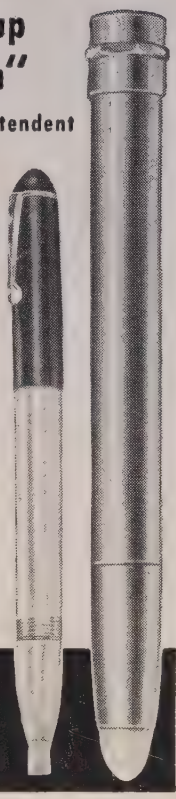

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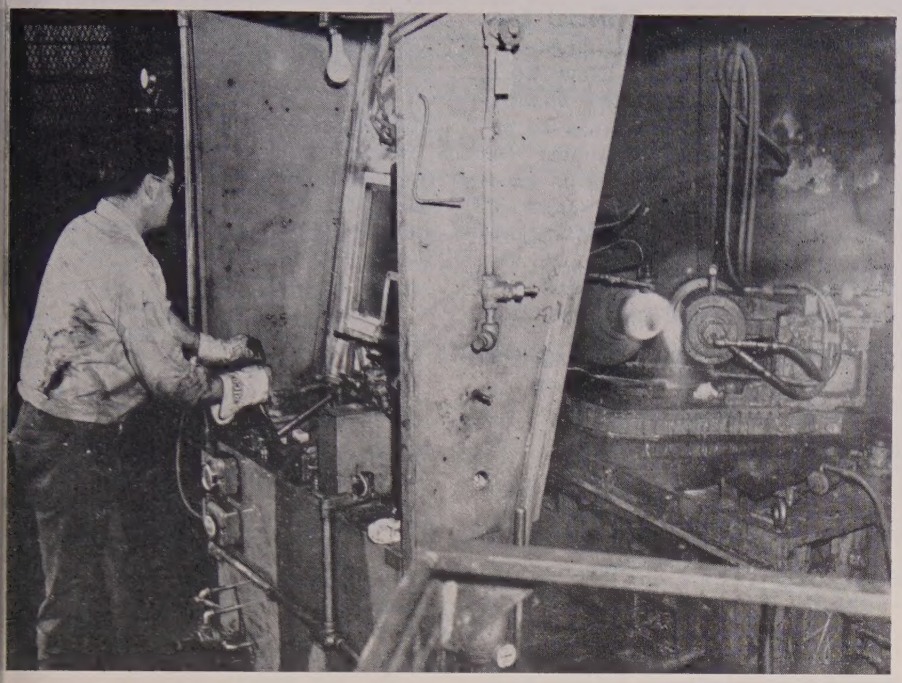

Oxy-Propane Cuts Kidde Costs

By using oxy-propane instead of oxy-acetylene to form and close fire extinguisher cylinder ends, Walter Kidde & Co. Inc., Bloomfield, N. J., saved 30 per cent on production costs. The cylinder ends are heated in induction coils to a temperature of 2000°F. The heating head maintains the temperature while the cylinder revolves on a vertical spindle. Special machinery closes the ends

service operations in the Midwest through establishment of main branches in Des Moines, Iowa; Indianapolis; Lansing, Mich.; Peoria, Ill.; and Waukesha, Wis.

Smith To Close Toledo Heater Plant

A. O. Smith Corp., Milwaukee, will close one of its Toledo, O., plants in September and transfer production equipment to facilities at Kankakee, Ill. The Industrial Water Heater Division in Toledo will be moved to the Kankakee plant. The firm's Toledo plant which makes landing gears is not affected by the consolidation.

Krasilousky Plans Increased Output

Mike Krasilousky Trucking & Millwright Co. moved its entire plant to a new factory on Maple avenue, Haverstraw, N. Y. General offices remain at 894 Manhattan Ave., Brooklyn, N. Y. The move is expected to increase production, cut costs and speed up deliveries.

Trade Association Boosts Membership

Steel Kitchen Cabinet Manufacturers Association, Cleveland, added two new member companies: Richmond Metal Mfg. Corp., Philadelphia, and Toledo Desk & Fixture Corp., Maumee, O. This gives the association a total of 21 member companies, representing a large proportion of total capacity of the industry. A program of trade statistics activity was established by the association.

Flint Steel Expanding Facilities

Flint Steel Corp., Tulsa, Okla., is building an additional warehouse structure on a site adjoining the firm's general office building at 21st street and Union avenue. Harold G. Lewis is president and general manager.

Bellows Buys Distribution Rights

Exclusive sales and distribution rights for the Locke drilling and tapping unit were acquired by Bellows Co., Akron.

Zero Buys Metal Fabricating Firm

Zero Mfg. Co., Burbank, Calif., purchased assets of Zierold Mfg. Co., precision metal fabricating firm, that city. President is John B. Gilbert and

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PRECISION • VOLUME • SPEED • ECONOMY
Small and Intricate to Medium Heavy Stampings
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vice president and general manager is James M. Dobbie. The firm will continue to deep draw close tolerance electronic aircraft and jet engine parts.

Outboard To Build Die Casting Plant

A new die casting plant to expand production of castings for its various divisions will be constructed by Outboard Marine & Mfg. Co., Waukegan, Ill. The building, to contain more than 80,000 square feet on one floor, will adjoin its smelter plant. Die casting production will be consolidated with the smelting of aluminum. Construction will be completed about Jan. 1, 1953. Cost of the building and additional equipment will be more than $1 million.

Valve Producer Appoints Agents

C. B. Hunt & Son Inc., Salem, O., manufacturer of air and hydraulic control valves, appointed as representatives: Circle Seal Supply Co., Pasadena, Calif.; Process Equipment Co., Denver; Pollard & Co., Spokane, Wash.

Pressure Products Moves Quarters

Pressure Products Corp. and its subsidiaries, Prepo Corp. and American Tempo Corp., moved their general offices and manufacturing facilities to larger quarters at 8225 N. Christiana, Skokie, Ill.

Borg-Warner Acquires Reflectal Corp.

Borg-Warner Corp., Chicago, acquired Reflectal Corp., New York, producer of aluminum foil blanket-type insulation. Reflectal will be operated as a subsidiary under the presidency of R. S. Ingersoll, president of Borg-Warner's Ingersoll Products Division. W. R. Julius, previously vice president of Reflectal, was named vice president and general manager of the new subsidiary.

Swartwout Opens West Coast Office

Swartwout Co., Cleveland, opened a district sales and service office for its Power Plant and Autronic Control Divisions at 317 W. Main St., Alhambra, Calif. The office will be managed by Roger L. Gilliland.

Barium Buys East Coast Aeronautics

Barium Steel Corp., New York, acquired the East Coast Aeronautics Inc., which operates four leased plants located near Mt. Vernon, N. Y. East Coast Aeronautics is a designer and fabricator of materials such as magnesium, aluminum and fiberglas as directly applied to the aircraft, marine and construction fields. Officers of the new Barium subsidiary are: J. A. Sisto, chairman of the board; Rudolph Eberstadt, president; Norman J. Davidson, former president of East Coast, vice president and general manager; Karl Dietrich, vice president; Richard C. Voorhees, vice president and treasurer.

RCA Opens Los Angeles Plant

Radio Corp. of America, New York, opened a plant at 11819 W. Olympic Blvd., Los Angeles, for manufacture of lightweight radar sets which weigh 173 pounds but can "see" 200 miles.

Borg-Erickson Moves to New Plant

Borg-Erickson Corp. moved its general offices and production facilities to its new plant at 1133 N. Kilbourn Ave., Chicago. The company manufactures scales.

Galvanic Products Completes Plant

Galvanic Products Corp., New York, completed construction of its plant at Valley Stream, Long Island. The plant is in operation, producing rectifiers, complete rectifier equipment and allied electronic components.

10 to 12 ft. lengths
ALL METALS
Also Screw Machine Products to Order
EASTERN
Machine Screw Corp.
New Haven, Conn.
Makers of H & G Die Heads

IMMEDIATE DELIVERY

ROLLER LEVELLERS

MCKAY ½" TO 2" FOUR-HIGH LEVELLER, 15" Diameter Rolls, (9) Levelling Rolls, (11) backing up rolls, (2) Pinching rolls, (1) 300 HP motor for main drive, (2) 10 HP motors for screw down and (1) 2 HP motor for pinch roll adjustment.

MCKAY ¼" TO 2" TWO-HIGH LEVELLER, 13" Diameter Rolls, (11) Levelling rolls, (2) Pinching rolls, with (1) 150 HP motor for main drive, (2) 7½ HP motors for screw down.

ABOVE MACHINES ARE NEW IN 1943, SELLING FOR 1/5 OF NEW COST, USED ONLY 6 MONTHS

PUNCH PRESSES

1400 TON COMBINED CAPACITY, BLISS #2 ET-10 TRIPLE ACTION TOGGLE, 650 Ton, 39" stroke, 75" shut height of plunger, 400 Ton, 28" stroke, 72" shut height of blankholder, 350 Ton, 12" stroke of lower ram, 62" x 86" bed area.

525 TON, BLISS #410A DOUBLE ACTION TOGGLE, 25" stroke, 62" shut height of plunger, 17" stroke, 60" shut height of blankholder, 60 x 84 bed area.

255 TON, TOLEDO #96-D DOUBLE CRANK, STRAIGHT SIDE, 6" stroke, 30" shut height, 51 x 87" bed area.

255 TON, #8-E BLISS DOUBLE CRANK, STRAIGHT SIDE, 8" stroke, 32" shut height, 42 x 108" bed area.

180 TON, #70-D CLEVELAND DOUBLE CRANK, STRAIGHT SIDE, 18" stroke, 32" shut height, 40 x 84" bed area.

125 TON, TOLEDO #S-56 TWIN TYPE O.B.I. PRESSES ON S. S. BASE, 3" stroke, 25 x 25" bed area, 12½" shut height.

88 TON, TOLEDO #92½ DOUBLE CRANK, GAP FRAME, 8" stroke, 34 x 66" bed area, 20" shut height.

88 TON, BLISS #4D DOUBLE CRANK, GAP FRAME, 2¼" stroke, 38 x 53½" bed area, 9¼" shut height.

87 TON, BLISS #4½ STRAIGHT SIDE, 4½" stroke, 21 x 27 bed area, 14½" shut height.

75 TON, WELLS DOUBLE CRANK GAP FRAME, 2" stroke, 20 x 80" bed area, 11⅛" shut height.

60 TON, TOLEDO, #203-E DOUBLE CRANK GAP FRAME, 4" stroke, 13 x 55½" bed area, 16" shut height.

MANY OTHER PRESSES IN STOCK FROM 5 TO 1400 TON CAPACITY

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STANDARD GAUGE FREIGHT CARS

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Gondolas, Composite, 40-Ton Capacity
Gondolas, Composite or All Steel, 50-Ton and 70-Ton
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Hoppers, Twin, All-Steel, 50-Ton, Cross Dump
Hoppers, All-Steel, 70-Ton, Cross Dump
Tank, 3,000-Gallon, High Pressure

EXTRA LONG FLAT CARS

40 & 50-Ton Capacity, Length 70' and 74'

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Side Dump, 16-Yd., 30-Ton Lift Door
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STANDARD GAUGE DIESEL-ELECTRIC ROAD SWITCHING LOCOMOTIVE

1500 H.P., 120-Ton, Type 0-4-4-0

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WANTED—SUPERINTENDENT FOR STEEL Plant, Transportation and Yard Department. To qualify applicant must have had experience within an integrated steel plant. Must be familiar with the operation and maintenance of Diesel Locomotives and cranes, operation of standard intra-plant railroad system, and departmental organization. Must be a leader. The plant is located in the Mid-West; good housing conditions. In reply please give full particulars concerning experience and personal qualifications. All replies will be held strictly confidential and personal interviews will be arranged. Write Box 543 STEEL, Penton Bdg., Cleveland 13, Ohio.

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300 TON PRESS BRAKE
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for central purchasing office of firm having multiplant ferroalloy manufacturing operations.

Must have detailed knowledge of chrome ore procurement and be familiar with import procedures as well as having experience in purchase of substantial tonnages of domestic commodities, such as coal, coke and steel scrap.

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Wanted
POWDER METALLURGIST

Familiar with all phases of sintered metal parts manufacture (including stainless steel).

Preferably also having E.E., and acquainted with powder metal projects related to the electronic and aviation industries.

Please state experience, previous positions held, references and salary requirements. Replies held strictly confidential!

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Reasonable
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NIAGARA SQUARING SHEAR #610
10' x 10 gauge capacity. New in 1949—Latest design — Excellent condition.
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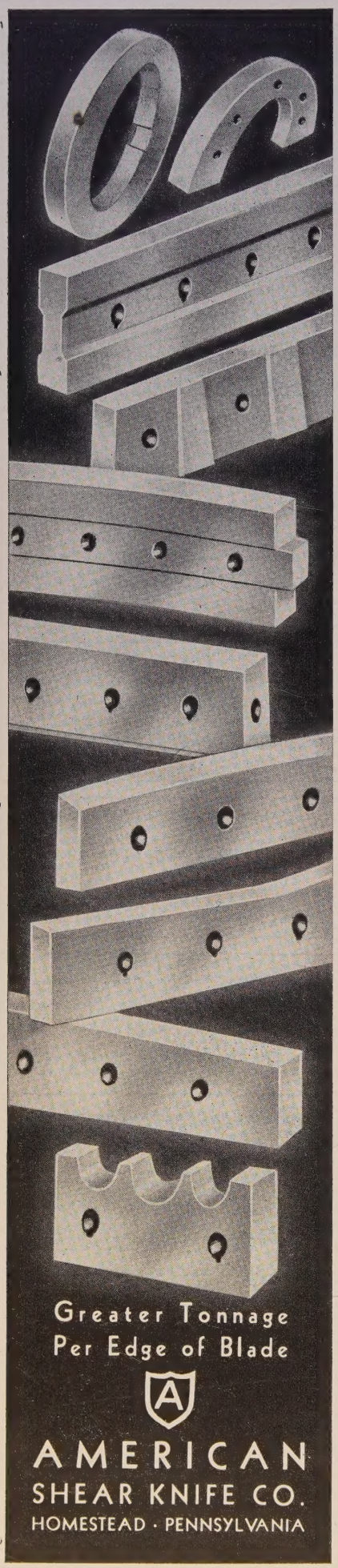

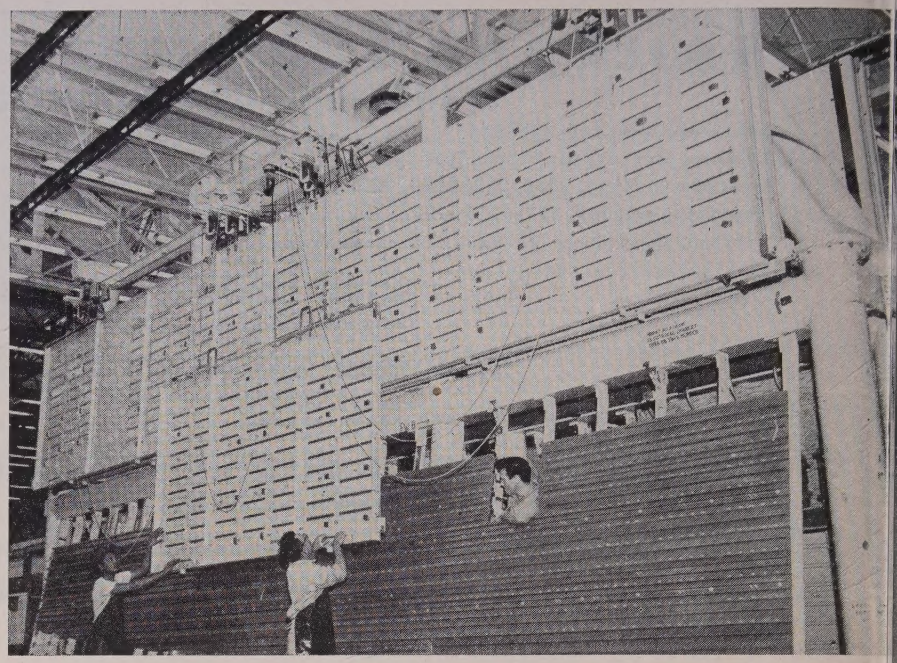

Super Drill Jig for Super Constellation

A crew at the Lockheed Aircraft Corp. plant in Burbank, Calif., lowers a 1000-[illegible] pound drill plate into position on a double-sided drill jig which Lockheed of-[illegible] ficials say is the only one of its kind in the aircraft industry. Weighing 30,000[illegible] pounds, it aids in fabricating the high-strength magnesium floor in the new[illegible] 1049B Super Constellation cargo model, now in production as the Navy R7V-1[illegible]

Dial Screw Products Co. Expands

Dial Screw Products Co. Inc., Woodside, N. Y., completed a plant at 126-02 Northern Blvd., Corona, N. Y. Facilities are increased greatly in these departments: Cold-headed and thread-rolling up to ¾-in. wire; automatic screw machines to 3½-in. multispindle. The secondary department was augmented with additional grinding, automatic drilling, milling, and broaching machines.

Allis-Chalmers To Build Branch

Contracts were awarded by Tractor Division, Allis-Chalmers Mfg. Co., Milwaukee, for construction of a building to house its Kansas City, Mo., branch. The branch will be located two miles south of Independence, Mo.

Lukens Establishes Branch Office

Lukens Steel Co., Coatesville, Pa., established its Albany, N. Y., sales office at 17 N. Pearl St., that city. Charles A. Carlson Jr., assistant district manager of sales of the New York district sales office, will make his headquarters at the Albany location.

Green River Orders Forge Shop Units

Green River Steel Corp., Owensboro, Ky., gave Hydropress Inc., New York, an order for a new forge shop installation. The main units are a 2500-ton long stroke upsetting press and a 1500-ton pure hydraulic rapid[illegible] forging press. Alloy steel ingots up[illegible] to 12,000 pounds will be processed[illegible] for subsequent rolling. These presses[illegible] are replacing a cogging mill.

San-Equip Plans Plant Addition

San-Equip Inc., Syracuse, N. Y.[illegible] plans to erect a $100,000 plant addi-[illegible] tion for production of defense ma-[illegible] terials. The building will have 16,000[illegible] square feet of floor space and wil[illegible] increase present floor area by 15 to[illegible] 20 per cent.

Parker Appliance Names Agent

Rockford Tool & Transmission Co.[illegible] Rockford, Ill., was appointed distrib-[illegible] utor of industrial tube fittings and[illegible] related accessories manufactured by[illegible] Parker Appliance Co., Cleveland.

American Can Opens West Coast Plant

American Can Co.'s ninth Cali-[illegible] fornia plant, capable of producing[illegible] 350 million containers a year, was of-[illegible] ficially opened in Stockton, Calif.[illegible] July 10-11. C. W. Roberts is vice[illegible] president of the firm's Pacific Divi-[illegible] sion.

Evans Forms Distributing Firm

Robert G. Evans, one of the found-[illegible] ers of Clipper Mfg. Co., organized[illegible] a new company, Robert G. Evans[illegible] Co., to distribute masonry and con-[illegible] crete sawing equipment. Headquar-[illegible] ters for the firm are located at 6315[illegible] Brookside Plaza, Kansas City, Mo.